

GOVERNMENT OF INDIA  
TARIFF COMMISSION



REPORT  
ON THE  
DIESEL FUEL INJECTION EQUIPMENT

BOMBAY,  
1955

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GOVERNMENT OF INDIA  
**MINISTRY OF COMMERCE AND INDUSTRY**  
**RESOLUTION**

**TARIFFS**

*New Delhi, the 7th September, 1955*

**No. 21(1)-TB/55.**—The Tariff Commission has submitted its Report on the Diesel Fuel Injection Equipment Industry on the basis of an inquiry conducted by it under Section 11 of the Tariff Commission Act, 1951. Its recommendations are as follows:—

- (1) Protection should be granted to the industry till 31st December, 1956, in the first instance by levying a duty of 60 per cent. *ad valorem* on single cylinder fuel injection pumps for stationary diesel engines and nozzleholders with a clamping capacity up to 1" clamping diameter for nozzles (atomisers) and component parts thereof excluding elements and delivery valves when imported separately and nozzles respectively. The rate of duty for nozzleholders with a clamping capacity up to 1" clamping diameter for nozzles (atomisers) of British manufacture should be fixed in accordance with the Indo-U.K. Trade Agreement.
- (2) Government should make arrangements with the Collectors of Customs, and the Director General of Commercial Intelligence and Statistics to record the imports of diesel fuel injection equipment separately under two categories, viz. (1) single cylinder fuel injection pumps for stationary diesel engines and (2) nozzleholder with a clamping capacity up to 1" clamping diameter for nozzles (atomisers) for use on stationary as well as automobile diesel engines.
- (3) The Indian Standards Institution should examine the feasibility of formulating standard specifications for the fuel injection equipment as well as its principal components in consultation with the manufacturers of fuel injection equipment, stationary diesel engines, and diesel engine automobiles.
- (4) Government should take steps to develop indigenous production of raw materials which are imported at present.
- (5) Government should make arrangements for periodical testing of the quality of indigenous fuel injection equipment.
- (6) Motor Industries Co. Ltd., and Fuel Injections Ltd., should be required to submit a detailed phased programme of manufacture of components for 1955, 1956 and 1957 so that by the end of 1957 it should be possible for them to manufacture all components of pumps and nozzleholders in India.

(ii)

- (7) Steps should be taken by Government to ensure that the phased programme is implemented by Motor Industries Co., Ltd., and Fuel Injections Ltd., according to the time table approved by them (i.e. Government).
  - (8) The manufacturers of fuel injection equipment should take steps to build up an adequate sales and service organisation so as to be able to meet the requirements of consumers in different parts of the country. They should also maintain adequate stocks of various types and specifications of pumps and nozzleholders required by consumers, and also provide adequate facilities for the servicing of their equipment.
2. Government accept recommendation (1). The protective duty recommended is being brought into force with immediate effect. Necessary legislation will also be introduced in due course.
3. Government also accept recommendations (2) to (5) and (7), and will take suitable steps to implement them as far as possible.
4. The Commission has also made certain recommendations regarding import policy which will be taken into account by Government as and when the import policy for successive half-years is formulated.
5. The attention of the Industry is invited to recommendations (6) and (8).

ORDER

Ordered that a copy of the Resolution be communicated to all concerned and that it be published in the *Gazette of India*.

L. K. JHA, Jt. Secy.

(iii)

GOVERNMENT OF INDIA

**MINISTRY OF COMMERCE AND INDUSTRY**

**NOTIFICATION**

**TARIFFS**

*New Delhi, the 7th September, 1955*

**No. 21(1)-T.B./55.**—In exercise of the powers conferred by sub-section (1) of Section 3A of the Indian Tariff Act, 1934 (XXXII of 1934), as in force in India and as applied to the State of Pondicherry, the Central Government hereby directs that with immediate effect there shall be levied on the articles specified in column (1) of the Table hereto annexed, when imported into India or the said State, a duty of customs of such amount as is specified in the corresponding entry in column (2) thereof.

**THE TABLE**

Name of article	Amount of duty of customs [inclusive of the duty chargeable under sub-section (1) of section 2 of the Indian Tariff Act, 1934, and any additional duty leviable under any other law for the time being in force].
(1)	(2)
(a) Single cylinder fuel injection pumps for stationary diesel engines, and component parts thereof excluding elements and delivery valves.	60 per cent <i>ad valorem</i> .
(b) Nozzleholders with a clamping capacity upto one inch clamping diameter for nozzles (atomisers) for use on stationary as well as automobile diesel engines and component parts (excluding nozzles) thereof.	60 per cent <i>ad valorem</i> .

**L. K. JHA, Jt. Secy.**

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DR. RAMA VARMA . . . . .	<i>Secretary</i>

## PERSONNEL OF THE PANEL WHICH HEARD THE CASE

SHRI M. D. BHAT . . . . .	<i>Chairman</i>
SHRI B. N. DAS GUPTA . . . . .	<i>Member</i>
SHRI C. RAMASUBBAN . . . . .	<i>Member</i>



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## REPORT ON THE DIESEL FUEL INJECTION EQUIPMENT INDUSTRY

The Tariff Commission observed in paragraph 12(c) of its Report on the Automobile Industry (1953) that it would be difficult to arrive at a general conclusion in regard to all the ancillary industries which differed considerably in their technique and equipment and in the stage of development reached by them, and that it would be necessary to examine the case of each industry separately with a view to assessing its technical soundness and determining the fair ex-works price of its products. In its letter No. TC/ID/E/88/Comp., dated 6th August, 1953, to the Ministry of Commerce and Industry, the Commission stated that it proposed to complete its examination of the cases of those ancillary industries in respect of which cost investigation had already been carried out and to submit reports on their claims to protection and assistance. The Commission further stated that the cases of other ancillary industries would be taken up in due course. Motor Industries Co. Ltd., Bangalore, submitted a representation to the Commission on 5th September, 1953, stating that they had made considerable progress in regard to their plans for the manufacture of diesel fuel injection equipment and that they expected to go into production shortly, and requested that protection and assistance should be given to them for establishing the diesel fuel injection equipment industry on a sound basis. On 11th December, 1953, Motor Industries Co. Ltd., requested that the Commission's inquiry should cover diesel fuel injection equipment used in all types of diesel engines as the fuel injection equipment proposed to be manufactured by them could be used in automobile, stationary or marine diesel engines. As the original terms of reference to the Commission in connection with the automobile industry precluded it from examining the claim of diesel fuel injection equipment required for engines other than those used in automobiles, Motor Industries Co. Ltd., were informed that they should make a representation to the Government of India in the Ministry of Commerce and Industry for widening the scope of the Commission's inquiry to cover diesel fuel injection equipment required for all types of diesel engines. They made a representation to Government accordingly on 3rd March, 1954, and the Government of India in the Ministry of Commerce and Industry authorised the Commission in their letter No. I-T(24)/54 dated 25th May, 1954, to extend the scope of the inquiry to cover diesel fuel injection equipment industry as a whole. The inquiry was accordingly undertaken by the Commission under Section 11 of the Tariff Commission Act, 1951.

2.1. A press note was issued by the Commission on 22nd September, 1954, inviting persons, firms or associations interested in the diesel fuel injection equipment industry to obtain copies of relevant questionnaires from the office of the Commission and to forward their replies thereto. Questionnaires were also issued to the producers, consumers and importers. The State Governments were requested to furnish information regarding the present position of the diesel fuel injection equipment industry in their respective areas and their views on the



question of granting protection and assistance to the industry. The Chief Industrial Adviser, Ministry of Commerce and Industry (Development Wing), the Director General of Supplies and Disposals, Government of India, the Director, National Physical Laboratory of India and the Director, Indian Institute of Science were requested to furnish memoranda on the wider scope of the inquiry into this industry. Data regarding c.i.f. prices etc., of certain types of diesel fuel injection equipment were obtained from the Collectors of Customs. The Director General of Commercial Intelligence and Statistics was addressed for information regarding the quantity and value of the diesel fuel injection equipment imported into the country during the preceding three years. A list of those to whom questionnaires were issued and from whom replies were received is given in Appendix I.

2.2. Shri M. D. Bhat, Chairman, visited the factory of Motor Industries Co. Ltd., Bangalore, on 6th January, 1955. Shri B. N. Das Gupta and Shri C. Ramasubban, Members, visited the factory of Motor Industries Co. Ltd., at Bangalore on 7th January, 1955 and 29th November, 1954, respectively. Dr. D. K. Malhotra, the then Secretary, Tariff Commission, and Shri N. Krishnaswami, Officer on Special Duty (Automobiles), Ministry of Commerce and Industry (Development Wing), visited the same factory on 24th February, 1954. Shri S. K. Basu, Cost Accounts Officer, visited the factory of Motor Industries Co. Ltd., at Bangalore from 26th November, 1954 to 7th December, 1954 and examined the cost of production of certain types of diesel fuel injection equipment manufactured by them.

2.3. A public inquiry into the diesel fuel injection equipment industry was held on 29th December, 1954 at the Commission's office in Bombay. A list of persons who attended the inquiry is given in Appendix II.

3. The fuel injection equipment is a very vital component of a diesel engine whether of stationary, marine or automotive type. The equipment consists of two units, a pump and a nozzleholder. For smooth running and economical operation of the engine, it is essential that the correct amount of fuel is injected at the right time in the cycle. To ensure correct performance, the equipment is required to be constructed to extremely fine precision limits. The function of the pump is to boost up the pressure on the fuel line in excess of the compression pressure in the engine so that the fuel is finally sprayed with the help of the nozzle at the proper time into the cylinder head of the diesel engine.

4.1. As the manufacture of fuel injection equipment for diesel engines is a highly specialised industry, there are only a few manufacturers of this equipment in countries which are manufacturing diesel engines. They make the equipment of different types and specifications to suit the designs and requirements of diesel engines. Motor Industries Co. Ltd., have furnished us with a list of different types and specifications of pumps and nozzleholders which are proposed to be manufactured by them. This list is given in Appendix III. In this Appendix are also given equivalent types and specifications of pumps

and nozzleholders produced by some of the well known foreign manufacturers which are used in India. At the public inquiry, the representative of Motor Industries Co. Ltd., stated that the equipment proposed to be manufactured by them of various types and specifications would meet the requirements of 95 per cent. of stationary diesel engines in the country, whether made indigenously or imported from abroad. He further stated that even for the remaining 5 per cent. of stationary diesel engines in the country, Motor Industries Co. Ltd., could make the equipment but small alterations in regard to mounting would be required before it could be used for those engines. The representative of Bryce, Berger Ltd., London, stated that the present fuel injection equipment of Bosch and Bryce in imported diesel engines already in use in the country could be replaced by the complete equipment proposed to be manufactured by Motor Industries Co. Ltd., but that parts would not be interchangeable. It was, however, pointed out by the representative of Motor Industries Co. Ltd., that certain parts of nozzleholders were interchangeable. The representative of Ruston & Hornsby, Ltd., stated that they had already placed an order with Motor Industries Co. Ltd., for fuel injection equipment for 11 h.p. diesel engines manufactured by them in the country, but that it would not be possible to make use of the fuel injection equipment produced by Motor Industries Co. Ltd., for diesel engines of 14 and higher horse power manufactured by them unless the whole engine was completely redesigned. He, however, agreed that the equipment suitable for their diesel engines of 14 and higher horse power could be produced in India either by themselves or Motor Industries Co. Ltd., but owing to the small volume the cost would be very high. The representative of Eruch D. Engineer and Co., Bombay, stated that Crossley Brothers, Ltd., used their own fuel injection equipment for their Crossley vertical engines and that no other equipment could be used for the engines unless the design of the engine was changed. The representative of Kirloskar Oil Engines, Ltd., Poona, stated that the fuel injection equipment manufactured by Motor Industries Co. Ltd., could be used for their diesel engines. The representative of Motor Industries Co. Ltd., informed us that they had already supplied samples of the fuel injection equipment produced by them to all the manufacturers of diesel engines in the country and that some of them were already using it. We consider that if the quality of the indigenous fuel injection equipment is found satisfactory, it would be in the interest of both the diesel engine and fuel injection equipment industries that the fuel injection equipment produced in the country should be used for indigenous diesel engines and therefore suggest that Ruston & Hornsby, Ltd., should further examine the question of altering their design of diesel engines of 14 and higher horse power so that the fuel injection equipment produced in the country could be used for all their diesel engines. It was agreed that for imported diesel engines of stationary type which were already in use in the country or might be imported in the future, the indigenous fuel injection equipment could be used except in cases in which the designs of engines such as those of Crossley Brothers Ltd., required the fuel injection equipment manufactured by themselves.

4.2. The representative of Motor Industries Co. Ltd., stated that the pumps manufactured by them for stationary diesel engines could not be used for automobile diesel engines but that the nozzleholders produced by them could be used for automobile diesel engines. The

question as to whether the scope of the inquiry should include pumps and nozzleholders for all types of diesel engines was discussed fully at the public inquiry and it was agreed that the scope of the inquiry should be confined to (a) single cylinder fuel injection pumps for stationary diesel engines and (b) nozzleholders with a clamping capacity up to one inch clamping diameter for nozzles (atomisers) for use on stationary as well as automobile diesel engines.

5.1. The requirements of the country in respect of diesel fuel injection equipment were met by imports until June 1954, when Motor Industries Co. Ltd., started manufacturing fuel injection pumps and nozzleholders. Motor Industries Co. Ltd., were registered as a public limited company in Madras on 12th November, 1951. They have entered into technical collaboration with Robert Bosch GmbH of Stuttgart, West Germany, for a period of 8 years from 1st January, 1951. The authorised capital of the company is Rs. 1,25,00,000 and the subscribed and paid up capital is Rs. 52,47,255. The original investment of the company on land, buildings, machinery, equipment, etc., is Rs. 31,76,216. They have obtained machinery, equipment and tools from West Germany and the United Kingdom. According to the terms of agreement with Robert Bosch, Motor Industries Co. Ltd., will manufacture diesel fuel injection equipment, sparking plugs, electric horns, generators, and electric starters, and Robert Bosch will supply them manufacturing data and workshop and assembly drawings, instructions for treatment and tests, and advice concerning manufacturing problems. The firm of Robert Bosch will also train Indians in its workshops. Motor Industries Co. Ltd., will pay Robert Bosch royalty of 4 per cent. on the net sales price. The firm of Robert Bosch is well known for its manufacture of diesel fuel injection equipment and has established factories for manufacturing this equipment in some of the foreign countries. Motor Industries Co. Ltd., are manufacturing at present in their factory at Bangalore diesel fuel injection equipment and sparking plugs. They have no research facilities at present, but propose to utilise research facilities of Robert Bosch. They have started a small chemical laboratory and a physical test department. There are 4 German experts and 10 Indian technicians. The number of workers is 60.

5.2. Another firm, Fuel Injections, Ltd., Bombay, was registered in Bombay in 1954 for the purpose of manufacturing fuel injection equipment. It has entered into an agreement with a foreign firm, viz., Injector Company, A.B., Stockholm, Sweden to buy its existing plant and machinery and the "know-how" for the manufacture of the fuel injection equipment. The authorised capital of the firm is Rs. 20,00,000 but a capital of Rs. 10,00,000 only is being raised by ordinary shares from the public. The firm proposes to commence production in December, 1955.

5.3. We understand that Kulko Engineering Works, Ltd., Kolhapur, who are manufacturing single cylinder stationary diesel engines, are producing fuel injection equipment for their own engines. They have not supplied any information to us in regard to their capacity to manufacture fuel injection equipment, their actual production, their investment in this line etc.

6.1. We have received various estimates of domestic demand for the fuel injection equipment from the manufacturers, importers and others. The Chief Industrial Adviser to the Ministry of Commerce and Industry has estimated the domestic demand for diesel fuel injection equipment as follows:—

Pumps	12,000
Nozzleholders	15,000
Elements	18,000
Delivery valves	15,000
Nozzles	100,000

6.1.1. Motor Industries Co. Ltd., have estimated the domestic requirements as follows:—

	1955	1956
A pumps	5,000	5,500
B pumps	4,500	4,500
Nozzleholders	14,000	20,000

6.1.2. Fuel Injections, Ltd., have estimated the demand for pumps, nozzleholders and nozzles at a c.i.f. value of Rs. 10 lakhs for original equipment and at a c.i.f. value of Rs. 60 lakhs for replacement.

6.1.3. Simpson and Co. Ltd., Madras, have estimated their own requirements for original equipment for pumps at 8,000 and for nozzleholders at 48,000. These estimates were discussed at the public inquiry and it was agreed that the demand for the fuel injection equipment which is being produced by Motor Industries Co. Ltd., should be estimated separately for pumps and nozzleholders under two categories:—

- (i) for original equipment;
- (ii) for replacement.

6.2. According to the information furnished to us by the Development Wing, the indigenous production of single cylinder diesel engines from 1951 to 1954 was as follows:—

1951	7,246
1952	4,347
1953	3,716
1954	7,607 (for 11 months).

We were informed that in addition to the manufacturers of diesel engines on the list of the Development Wing, there were a few manufacturers who were producing diesel engines. Their annual production was estimated at about 2,000 diesel engines.

6.3. The Development Wing of the Ministry of Commerce and Industry has stated that the total installed capacity for the manufacture of single cylinder diesel engines in the country is at present 14,515 per year but that schemes for the manufacture of stationary diesel engines submitted by three new firms have been approved by Government which would increase the capacity by 9,360, i.e., the

total annual capacity will be 23,875 diesel engines. The Planning Commission in its Programme of Industrial Development has estimated that the annual installed capacity of the diesel engine industry would increase to about 39,725 by 1955-56.

6.4. Fuel injection equipment consisting of a pump and a nozzle-holder is required for all single cylinder diesel engines produced in the country. At the public inquiry, the representatives of Kirloskar Oil Engines, Ltd., Poona, and Ruston & Hornsby, Ltd., Bombay, informed us that their firms had decided to expand their production. In view of the several irrigation and industrial projects that are being carried out at present, it is likely that the demand for stationary diesel engines will increase in areas where facilities for hydro-electric power are not available. At the public inquiry, it was agreed that in view of these factors, the average indigenous production of stationary diesel engines may be expected to increase to about 11,000 per year for 1955 and 1956. The number of pumps and nozzleholders required for indigenous diesel engines during this period would, therefore, be 11,000 each per year. As fuel injection pumps will be produced in the country for single cylinder stationary engines only, we have not taken into account the demand for pumps for automobile and marine diesel engines. As regards the demand for replacement of pumps and nozzleholders for single cylinder stationary diesel engines already in use in the country it was agreed that it was not considerable. Figures of imports of the fuel injection equipment are not available from official records. We have, however, obtained information from the importers of Bryce, CAV, Bosch, etc., fuel injection equipment, which shows that during the four years, 1951, 1952, 1953 and 1954 the total number of fuel injection pumps and nozzleholders imported by them for replacement was 23,405 and 23,622 respectively. We were informed by the importers that some of the manufacturers of stationary diesel engines were importing fuel injection equipment required for replacement direct from the foreign manufacturers. Taking all these factors into consideration, we estimate that the annual demand for replacement for pumps and nozzleholders would be about 6,000 each.

6.5. Since the scope of the inquiry includes pumps for stationary diesel engines only and nozzleholders for both stationary and automobile diesel engines, it is necessary to estimate the demand for nozzleholders for automobile diesel engines also. The representative of Motor Industries Co. Ltd., stated at the public inquiry that they had not produced the type of fuel injection equipment required for diesel engines of Mercedes Benz and Leyland motor vehicles which would be produced in the country, but that the fuel injection equipment produced by them was suitable for Perkins diesel engines.

6.6. Simpson and Co. Ltd., who are producing Perkins diesel engines required for automobiles stated that 48,000 nozzleholders would be required annually for diesel engines that would be manufactured by them. Perkins diesel engines are required at present mostly for conversion of petrol motor vehicles into diesel motor vehicles. This demand may, however, gradually decline as progress is made in the production of diesel motor vehicles in the country. The representative of the Development Wing of the Ministry of Commerce and Industry informed us that their production was not expected to be more than 4,000 diesel engines per year. On this basis,

24,000 nozzleholders would be required by them. We were informed at the public inquiry that the number of diesel engine automobiles in the country was about 30,000. It was agreed that for about half this number, that is, 15,000 diesel engine automobiles, Motor Industries Co. Ltd., would not be able to supply nozzleholders, as they did not produce the type of nozzleholders required for these vehicles. It was also agreed that the replacement demand for nozzleholders for the remaining 15,000 diesel engine automobiles might be estimated at 10 per cent. As 90,000 nozzleholders will be required for 15,000 vehicles, the replacement demand would be 9,000. The total domestic demand for pumps and nozzleholders may, therefore, be estimated as follows:—

*Pumps :*

Stationary engines —

Original equipment . . . . .	11,000
Replacement . . . . .	6,000
<b>TOTAL . . . . .</b>	<b>17,000</b>

*Nozzleholders :*

Stationary engines—

Original equipment . . . . .	11,000
Replacement . . . . .	6,000

Automobile engines—

Original equipment (Perkins) . . . . .	24,000
Replacement . . . . .	9,000
<b>TOTAL . . . . .</b>	<b>50,000</b>

As regards the principal components of pumps and nozzleholders, viz., elements, delivery valves, and nozzles, the representative of Motor Industries Co. Ltd., stated at the public inquiry that the question of these 3 components which they did not propose to manufacture for some time need not be considered at this stage. We have not, therefore, attempted to make any estimate of the domestic demand for these components.

7.1. According to the information furnished to us by Motor Industries Co. Ltd., their rated capacity on single shift basis is as follows:—

" PF A " type pumps . . . . .	4,000 per year
" PF B " type pumps . . . . .	6,000 per year
" S " type nozzleholders . . . . .	10,000 per year.

At the public inquiry, the representative of Motor Industries Co. Ltd., stated that the production of pumps and nozzleholders could be increased to 14,000 and 15,000 respectively per year on three shift basis. He further stated that if the domestic demand for pumps exceeded 14,000, Motor Industries Co. Ltd., could increase their production to the required extent without much difficulty; and that as regards nozzleholders they had already placed orders for additional

machinery and equipment which were expected to arrive shortly, and when the new machinery and equipment went into production from about October this year, the total production of nozzleholders would be about 50,000 per year. The cost of this additional machinery and equipment was estimated at Rs. 4,00,000. The actual production of Motor Industries Co. Ltd., from June 1954 to September 1954 was as follows:—

"PF A" pumps . . . . .	1,006
"PF B" pumps . . . . .	769
<b>TOTAL . . . . .</b>	<b>1,775</b>
 "S" type nozzleholders . . . . .	 1,611

7.2. The value of the indigenous raw materials which can be used at present by Motor Industries Co. Ltd., in the manufacture of "PF A" and "PF B" types of pumps and "S" type of nozzleholders is 60·9 per cent., 64·9 per cent. and 96·5 per cent. respectively of the total value of the raw materials used by them in the manufacture of these types of pumps and nozzleholders. They are at present importing parts, such as elements, delivery valves, regulation sleeves and minor parts, such as copper asbestos washers in the case of pumps, and minor parts only such as copper asbestos washers in the case of nozzleholders. The total cost without duty of the imported parts comes to Rs. 10-3-2 and Rs. 11-8-0 in the case of two types of pumps respectively and to Re. 0-7-10 in the case of nozzleholders.

7.3. Motor Industries Co. Ltd., have submitted to us a phased programme of their production. They have already completed the first stage of their programme which included manufacture of all parts for single cylinder engine pumps of "PF A" and "PF B" types and of nozzleholders of "S" type with the exception of the parts mentioned above.

The second and third stages of their programme are as follows:—

*Second stage 1955-56.*—They propose to carry out final operations by the end of 1955 on pump elements and to finish delivery valves from imported unfinished components by 1956.

*Third stage 1957.*—By the end of 1957, they will (i) manufacture injection equipment for road vehicles (multi-cylinder pumps) with the exception of housings, cam shaft and parts for governors and feed pumps; (ii) completely manufacture elements and delivery valves; (iii) completely manufacture fuel injection equipment for stationary engines; and (iv) commence manufacture of injection nozzles:

Motor Industries Co. Ltd., have informed us that additional machinery and equipment would be required for the manufacture of elements and delivery valves. The cost of the additional machinery and equipment was estimated by them at Rs. 4,50,000 for elements, and at Rs. 1,75,000 for delivery valves.

7.4. Fuel Injections, Ltd., have informed us that their programme of manufacture differs radically from that of Motor Industries Co. Ltd. They have submitted the following phased programme of manu-

facturing capacity per annum on single shift basis to the Development Wing of the Ministry of Commerce and Industry:—

*First stage.*—30,000 Nos. of "S" type nozzleholders.

*Second stage.*—14,400 elements and delivery valves.

*Third stage.*—10,800 'A' type pumps.

*Fourth stage.*—10,800 complete nozzleholders of 'S' type.

*Fifth stage.*—10,800 complete fuel injection equipment.

They have informed us that their programme of manufacture on single shift basis will consist of two stages:—

*First stage, November-December 1955:*

(i) Assembling single cylinder A and B type pumps . . . . .	6,000 per annum
(ii) Assembling nozzleholders . . . . .	6,000 " "
(iii) Assembling "S" type nozzles . . . . .	30,000 " "
and (iv) Elements for "A" type pumps . . . . .	6,000 " "

*Second stage, 1957:*

A type pumps . . . . .	6,000 to 9,600	per annum
B type pumps . . . . .	6,000 to 9,600	" "
C type pumps . . . . .	6,000 to 9,600	" "
Nozzles . . . . .	48,000 to 60,000	" "
Nozzleholders . . . . .	6,000 to 12,000	" "
Elements . . . . .	12,000 to 18,000	" "

7.5. It will thus be seen that the production of the two units with the installation of additional machinery and equipment by Motor Industries Co. Ltd., will be sufficient to meet the requirements of the country in respect of pumps for stationary diesel engines and in respect of nozzleholders for stationary as well as certain types of automobile diesel engines.

7.6. As regards components, such as elements, delivery valves, nozzles, etc., we recommend that Motor Industries Co. Ltd., and Fuel Injections, Ltd., should be required to submit a detailed phased programme of manufacture, so that by the end of 1957 it should be possible for them to manufacture all parts of the equipment in the country. We further recommend that steps should be taken to ensure that the phased programme is implemented by the two units according to the time table approved by Government.

8.1. The principal raw materials required by Motor Industries Co. Ltd., are:—

**Raw materials** (a) *For pumps.*—(i) cast iron castings of special alloy, (ii) bright cold drawn free cutting mild steel hexagon bars, (iii) bright cold drawn free cutting mild steel round bars, (iv) case hardening hot rolled mild steel bars, (v) free cutting brass bars, (vi) iron sheets, copper tubes, etc.

(b) *For nozzleholders.*—(i) bright cold drawn free cutting mild steel hexagon bars, (ii) bright cold drawn free cutting mild steel round bars, (iii) steel forgings of special alloy, (iv) case hardening bright drawn mild steel bars, and (v) iron sheets, copper tubes, etc.



8.2. Motor Industries Co. Ltd., have furnished us with a statement showing the progressive manufacture of components in their factory. These are given in Appendix IV. The components that are being imported by them at present are:—

- (i) pump elements,
- (ii) delivery valves,
- (iii) control bushing,
- (iv) coil spring, and
- (v) washers.

They have stated that bright drawn steel bars, round and hexagon, are not produced in the country and have to be imported. As regards hot rolled steel bars for pumps, they have stated that although some types of hot rolled steel bars are made in the country, they have difficulty in purchasing them from indigenous sources as their annual requirements of this material for each diameter and chemical composition are so small, that manufacturers of this material, namely, Tata Iron and Steel Company, Ltd., and Mysore Iron and Steel Works, Bhadravati are not interested in undertaking the supply of this material.

8.3. Cast iron castings are expected to be available locally and Motor Industries Co. Ltd., have placed trial orders with local manufacturers. Steel forgings for "S" type nozzleholders are available from indigenous sources and they have already placed orders for dies and forgings with Guest, Keen, Williams, Ltd., Calcutta, and Praga Tools Corporation, Secunderabad. As regards free cutting round brass bars for PFA and PFB pumps, they have placed an order with National Pipes and Tubes Co. Ltd., Calcutta for extruded free cutting brass bars but so far they have not been able to obtain satisfactory supply from them.

8.4. It is desirable that the diesel fuel injection equipment industry should not be dependent for raw materials required by it upon imports from foreign countries. We recommend that steps should be taken by Government to develop indigenous production of raw materials which are imported at present.

9.1. The representative of Motor Industries Co. Ltd., informed us at the public inquiry that they had supplied fuel injection equipment to Cooper Engineering Co. Ltd., Kirloskar Oil Engines, Ltd., Textool Co. Ltd., and a few other firms. He further stated that some of them had placed orders for fresh supplies and some had already informed them that they were satisfied with the quality. He explained that each component was tested by them at their factory at Bangalore before it was taken to the assembly line and that the finished product was also tested according to the standards laid down by Bosch before it was packed. Motor Industries Co. Ltd., have supplied their equipment to the Indian Institute of Science, Bangalore, where it is being tested at present along with the corresponding imported equipment. The representative of Motor Industries Co. Ltd., also informed us that they had supplied some of the nozzleholders to transport organisations, but they had not yet received any report from them regarding their quality. Although production has been comparatively small so far, and the equipment

**Quality of the indigenous product**

supplied to some of the manufactures of diesel engines and transport organisations has been in use for a short time, it is reasonable to expect that since the equipment is being manufactured according to Bosch standards and under the guidance of German experts, some of whom were associated with the manufacture of similar equipment in other foreign countries, the quality would be found satisfactory. Nevertheless we recommend that Government should make arrangements for the periodical testing of the quality of the indigenous fuel injection equipment.

9.2. The question regarding prejudice was discussed at the public inquiry and the representative of Motor Industries Co. Ltd., stated that so far they had not encountered any serious prejudice in respect of their equipment.

9.3. There are at present no standard specifications for the fuel injection equipment or its components. The standardisation of the equipment is desirable and we, therefore, recommend that the Indian Standards Institution should examine the feasibility of formulating standard specifications for the equipment as well as for its principal components in consultation with the manufacturers of fuel injection equipment, stationary diesel engines and diesel engine automobiles.

10.1. The import control policy during the period July-December 1954 was as follows:—

(a) For use in diesel engines of all types.  
**Import control policy** except spare parts for internal combustion  
**and imports** engines of road vehicle type—

(i) *For original equipment.*—The policy was the same as for the import of diesel engines, *vide* Serial Nos. 30, 30(a), (b), (c) and (d) of Part II of Section II of the Import Control Policy Book for July-December 1954, *viz.*, licences were granted on *ad hoc* basis to actual users in the case of diesel engines of 0.3 h.p. and 4-30 h.p. For diesel engines above 30 h.p. applications for licences were considered on *ad hoc* basis for imports for a period of 12 months. With regard to marine type diesel engines, licences were granted to actual users only on a quota of 100 per cent. of half of best year's imports, and were valid for a period of 12 months. Applications for licences of imports of marine engines from fishermen's co-operative societies were considered on *ad hoc* basis.

(ii) *For replacement.*—Licences were granted for imports from General and Soft Currency areas to established importers on a quota of 100 per cent. of half of best years' imports of spares for diesel engines covered by Serial No. 30, or alternatively on the basis of 10 per cent. of half of best years' imports of complete diesel engines from the currency area concerned. The licences were valid for a period of 12 months, but licences mentioned above were valid only for the import of spares which had been standardised by the makers as spares of the particular diesel engines and were supplied by them. For this purpose, the name and type of diesel engines and the particulars of the manufacturer concerned had to be furnished and these details were indicated on the licences. Not more than 10 per cent. of the face value of the quota licences was to be used for the import of the following: (i) cylinder blocks, (ii) baseplates, (iii) flywheels, (iv) flywheel keys, (v) piston rings below 6" diameter, (iv) pistons

and (vii) cylinder liners. The following diesel engine spare parts were importable along with other spares under quota licences for S. No. 30 (e) of Part II:—(i) fuel pumps and injector units, (ii) piston rings above 6" diameter and (iii) valves and valve guides. Not more than 6½ per cent of the face value of the licence was to be utilised for the import of thin wall bearings.

(b) *For use in diesel engines of the road vehicle type.*—Licences for imports of fuel injection equipment required for original equipment and for replacement purposes in engines of vehicles specified in S. Nos. 293, 295 and 297 of Part IV of Section II of the Import Control Policy Book for July-December 1954 were granted to manufacturers, assemblers, importers and consumers on the basis of specified quotas as was indicated in Appendix XXVI of the Import Control Policy Book.

10.2. The import control policy for the period, January-July 1955 is as follows:—

(i) Not more than 50 per cent of the face value of quota licences can be utilised for the import of single cylinder pumps and nozzle-holders.

(ii) Licences for motor vehicle parts falling under Serial Nos. 293, 295 and 297(IV) will not be valid for the import of fuel injection equipment and parts thereof.

(iii) Past imports of fuel injection equipment of diesel engines of all types including the road vehicle type will not be taken into account for calculation of quota. Quota licences will not be valid for import of fuel injection equipment for all types of diesel engines. Certain specified parts of diesel engines are covered by O.G.L. up to 30-9-1955. Quota will be calculated on the basis of 100 per cent of half of best year's imports falling under the serial number or alternatively on the basis of 10 per cent of half of best year's imports of complete diesel engines from the currency area concerned. Licences will be valid only for the imports of spares which have been standardised by the makers as spares in the particular diesel engines and are supplied by them. For this purpose, the name and type of diesel engines and the particulars of the manufacturer concerned should be furnished and these will be indicated on the licences. Not more than 10 per cent of the face value of the quota licence can be used for the import of the following items:—

- (i) Cylinder blocks,
- (ii) Baseplates,
- (iii) Flywheels,
- (iv) Flywheel keys,
- (v) Piston rings below 6" diameter,
- (vi) Pistons,
- (vii) Cylinder liners.

10.3. The following diesel engine spare parts will be importable along with other spares under quota licences for Serial No. 30 (e) of Part II:—

- (i) Piston rings of 6" diameter and above,
- (ii) Valves and valve guides,

- (iii) Not more than 6½ per cent of the face value of the licence can be utilised for the import of thin wall bearings.

10.4. Statistics of imports of diesel fuel injection equipment are not recorded separately in the Accounts relating to the Foreign Trade and Navigation of India. We think that it is necessary that imports of the fuel injection equipment consisting of (a) pumps and (b) nozzleholders should be recorded separately and suggest the arrangements should be made with the Collectors of Customs, and the Director General of Commercial Intelligence and Statistics to record imports of the diesel fuel injection equipment separately under the following categories:—

*Fuel Injection equipment:*

- (a) Single cylinder fuel injection pumps for stationary diesel engines,
- (b) Nozzleholders with a clamping capacity upto 1" clamping diameter for nozzles (atomisers) for use on stationary as well as automobile diesel engines.



II. Diesel fuel injection equipment is assessed to import duty at various rates according to its use in different types of diesel engines. The relative extracts from the Indian Customs Tariff (39th issue) is given below:—

Serial No.	Description of the engine in which fuel injection equipment is used.	I.C.T. No.	Description of the item No. as given in the I.C.T.	Nature of duty	Rate of duty				Remarks
					Standard	Preferential if the article is the produce or manufacture of the U.K.			
I		2	3	4	5	6	7	8	
I	Vehicle type of diesel engine.	75(11)(i) †	The following engine components : Thin wall bearings, cylinder liners, carburetors, oil pumps, air cleaners, oil filters, fuel pumps and fuel line hoses with connections.	Revenue	25 per cent. <i>ad valorem.</i>	17½ per cent. <i>ad valorem.</i>			† This is a GATT item.
		75(12)]	Articles other than rubber tyres, tubes, batteries and such other components as are specified in items No. 75(9), 75(10) and 75(11) adapted for use as parts and accessories of motor vehicles other than motor cycles and motor scooters.	Revenue	25 per cent. <i>ad valorem.</i>	17½ per cent. <i>ad valorem.</i>			
2	Diesel Tractors *(A) if adapted exclusively for use on agricultural tractors.	72(39)* †	Agricultural tractors and parts thereof †.	Free					*The classification and rates of duty for fuel injection equipment used in

diesel tractors will only apply if such injection equipments are non-interchangeable with vehicular type of diesel engines. Otherwise the injection equipment will be assessed to duty applicable to such equipment used in vehicular type of diesel engines. †This is a GATT item.

(B) Otherwise

(a) if operated by ‡ 72(3)  
BHP or more.

Component parts of machinery as defined in items Nos. 72, 72 (1) and 72(2), namely, such parts only as are essential for the working of the machine or apparatus and have been given for that purpose some special shape or quality which would not be essential for their use for any other purpose but excluding small tools like twist drills and reamers, dies and taps, gear cutters and hacksaw blades : Provided that articles which do not exactly satisfy this condition shall also be deemed to be component parts of the machine to which they belong if they are essential to its operation and are imported with it in such quantities as may appear to the Collector of Customs to be reasonable.

5½ per cent  
ad valorem.

..

..

Revenue

1	2	3	4	5	6	7	8
	(b) if operated by less than $\frac{1}{4}$ BHP.	72(6)	Machinery and component parts thereof, meaning machines or parts of machines to be worked by manual or animal labour, not otherwise specified, and any machine (except such as are designed to be used exclusively in industrial processes) which require for their operation less than one quarter of one brake-horse-power.	Revenue	31 $\frac{1}{2}$ per cent. <i>ad valorem</i> .	..	..
3	Stationary or marine type diesel engine* (a) if operated by $\frac{1}{4}$ BHP or more.	72(3)	Same as against this item No. Revenue above.	Revenue	5 $\frac{1}{2}$ per cent. <i>ad valorem</i> .	..	..
	(b) if operated by less than $\frac{1}{4}$ BHP.	72(6)	Same as against this item No. Revenue above.	Revenue	31 $\frac{1}{2}$ per cent. <i>ad valorem</i> .	..	..

\*The note above against the asterisks for S. No. 2 applies to injection equipment used in stationary or marine type diesel engines also.

It will thus be seen that the duty on fuel injection equipment varies from nil to 31 $\frac{1}{2}$  per cent according to the type of engine in which it is used. We were informed at the public enquiry that the diesel fuel injection equipment for automobile engines is some times assessed under item No. 75 (11) (i) or item No. 75 (12) of the Indian Customs Tariff Schedule. It appears to us that the correct item under which it should be assessed to duty is Item No. 75 (13). We suggest that the position should be clarified by Government by amending items. No. 75 (11) (i) and 75 (12) suitably if necessary.

12. We have obtained from the Collectors of Customs and some of the importers information regarding c.i.f. prices, clearing charges, etc., of certain types and specifications of imported fuel injection equipment, namely, pumps of "A" "PFR", "B", and "C" types and nozzleholders of "S" type. The c.i.f. prices, clearing charges, etc., were discussed at the public inquiry and we have decided to adopt the following c.i.f. prices and landed costs of pumps and nozzleholders of types and specifications corresponding to the types and specifications of indigenous pumps and nozzleholders which represent broadly the popular categories under which different kinds of pumps and nozzleholders produced by Motor Industries Co. Ltd., can be classified and which form the bulk of their production.

Items	Pumps		Nozzleholders	
	Bryce A1AA70/ 5599K (Indigenous H-PF 1A70 BS 175)	CAV BPF1B60 BS6031 (Indigenous H-PF 1B 60 CS 131)	Bryce A167SD127 (Indigenous H-KBL67S13)	CAV BKB35S87 (Indigenous H-KB35SA 369)
	Rs. A. P.	Rs. A. P.	Rs. A. P.	Rs. A. P.
(1) C.i.f. price . . . . .	41 10 0	36 13 4	22 3 4	10 10 8
(2) Customs duty . . . . .	2 3 0	1 14 11	1 2 0	1 13 10
(3) Clearing charges . . . . .	1 1 0	3 10 11	0 8 0	1 1 1
(4) Landed cost . . . . .	44 14 0	42 7 2	23 13 4	13 9 7
(5) Landed cost excluding customs duty . . . . .	42 11 0	40 8 3	22 11 4	11 11 9

13. Our Cost Accounts Officer has examined the cost of production of the diesel fuel injection equipment manufactured by Motor Industries Co. Ltd. The cost data compiled by him were discussed with the representatives of Motor Industries Co. Ltd. As they desire that the details of costs should be kept confidential, we are forwarding the report of the Cost Accounts Officer as a separate enclosure to this report.

Motor Industries Co. Ltd., started manufacturing components from the beginning of April 1954 and in June 1954 pumps and nozzleholders were assembled for the first time from the components manufactured in their factory, as well as from those imported by them. Actual costs have been examined for only one month, that is, for October 1954 when production was in full swing. The production during this month was assumed to be 600 pumps and 600 nozzleholders of the following types and specifications:—

300—H-PF 1A 70 BS 175 type pumps

300—H-PF 1B 60 CS 131 - „ „



300—H-KBL 67 S 13 type nozzleholders (fitted with edge type filter)

300—H-KB 35 SA 369 type nozzleholders.

Although the period for which actual costs were examined is very short, we have been able to make, as a result of our discussion with the representatives of Motor Industries Co. Ltd., a rough estimate of the future costs of production. The following statement gives a rough estimate of the cost of production and fair ex-works price of the above two types of pumps and two types of nozzleholders:—

Items	Pumps			Nozzleholders		
	H-PFIA 70BS 175	H-PFIB 60CS131	H-KBL 67S13	H-KB 35 SA369		
	Rs. A. P.	Rs. A. P.	Rs. A. P.	Rs. A. P.		
1. (a) Raw materials :						
(including duty) . . .	4 0 4	7 3 10	3 7 6	2 13 2		
(duty element) . . .	(0 13 7)	(1 8 6)	(0 11 8)	(0 9 7)		
(b) Imported components :						
(including duty) . . .	10 11 8	12 1 7	0 8 4	0 8 4		
(duty element) . . .	(0 8 6)	(0 9 7)	(0 0 6)	(0 0 6)		
(c) Locally purchased materials.	0 2 7	0 2 7	0 0 1	0 0 1		
Wastage in assembly . . .	14 14 7 0 2 5	19 8 0 0 3 1	3 15 11 0 0 8	3 5 7 0 0 6		
Credit for scrap . . .	15 1 0 0 2 0	19 11 1 0 2 1	4 0 7 0 0 1	3 6 1 0 0 1		
Net materials . . .	14 15 0	19 9 0	4 0 6	3 6 0		
2. Conversion charges . . .	20 2 10	25 15 6	30 15 9	26 5 4		
Total cost . . .	35 1 10	45 8 6	35 0 3	29 11 4		
3. Packing charges . . .	0 4 5	0 5 8	0 2 7	0 2 7		
4. Interest on working capital . . .	0 9 0	0 11 8	0 7 9	0 6 8		
5. Return on block . . .	5 10 9	5 10 9	7 7 5	7 7 5		
6. Royalty . . .	1 11 9	2 2 10	1 12 9	1 9 2		
Fair ex-works price . . .	43 5 9	54 7 5	44 14 9	39 5 2		

It will be seen that conversion charges for nozzleholders are comparatively higher than those for pumps because in the case of nozzleholders, the proportion of components manufactured indigenously is much larger than in the case of pumps. We may point out that as more parts of pumps are progressively manufactured, the cost of production and fair ex-works price of pumps are likely to increase correspondingly.

The various factors which we have taken into account in arriving at the above estimates are described below:—

The representative of Motor Industries Co. Ltd., assured us that they would be able to produce 14,000 pumps and 15,000 nozzleholders per annum in the future on three shift basis. We have assumed that

the production of pumps and nozzleholders of different types and specifications would be as follows:—

	Nos.
Pumps of the type H-PF 1A 70 BS 175 . . . . .	7,000
Pumps of the type H-PF 1B 60 CS 131 . . . . .	7,000
Nozzleholders of the type H-KBL 67 S 13 . . . . .	7,500
Nozzleholders of the type H-KB 35 SA 369 . . . . .	7,500

The latest rates of consumption of raw materials have been assumed for the future. So far Motor Industries Co. Ltd., have been using castings imported from Germany. They have been trying to obtain suitable castings from indigenous sources, but have not been successful so far. We have, therefore, based our calculations on the actual cost of imported castings.

As the manufacture of components of the fuel injection equipment was started in April 1954, the workers employed were not sufficiently trained by October 1954. They have since acquired more experience and skill and will therefore have to be paid higher wages according to the rates prevalent in Bangalore for workers who have received similar training. Necessary provision has been made for increased wages and for increase in the number of workers required on account of higher production.

Cost of special tools and jigs has been provided on the basis that they will be written off within a period of 5 years.

Depreciation has been allowed in respect of plant and machinery according to the income tax rates.

Expenditure on salary, allowances etc., of German experts employed by Motor Industries Co. Ltd., has not been taken into account but provision has been made for salary etc., of Indian technicians who will eventually replace German experts.

Working capital has been taken to be equal to 5 months' cost of production and interest has been allowed thereon at  $4\frac{1}{2}$  per cent per annum.

Return on block has been allowed at 10 per cent on the original value of the fixed assets excluding special tools and jigs and motor car used exclusively for sales on the basis of the allocation made for the manufacture of pumps, nozzleholders and sparking plugs according to the length of time for which each individual machine or work centre is used for each type of the product.

14.1. The statement on page 21 gives a comparison of fair-  
**Comparison of fair ex-** ex-works price of the indigenous fuel injection  
**works price with lan-** equipment (pumps of two types and specifications:  
**ded cost without duty.** and nozzleholders of two types and specifications)  
 with the c.i.f. price and landed cost without duty of the corres-  
 ponding imported fuel injection equipment.

14.2. The rates of duty indicated for pumps and nozzleholders show a great divergence. Even in respect of each of them there is a marked divergence in the rates of duty for the two types selected for costing. We have examined whether the quantum of duty should be based on the average rate of duty for pumps and nozzleholders together or whether the quantum of duty should be separate for pumps and nozzleholders and based on the average rate of duty for the two types of pumps and the two types of nozzleholders, and come to the conclusion that an overall rate of duty for pumps and nozzleholders together would be appropriate in this case for reasons explained below:—

- (i) Pumps and nozzleholders form an integral part of the fuel injection equipment which is produced by the same company from the same machinery. The duty required should, therefore, be related to the equipment as a whole.
- (ii) A levy of about 18·63 per cent. duty for pumps and 151·49 per cent. duty for nozzleholders based on the average of the rates of duty for two types of pumps and two types of nozzleholders would increase the price of nozzleholders disproportionately in relation to that of pumps.

On this basis, the weighted average of duty works out to 59·8 per cent. as shown below:—

	Rs.
7,000 pumps "A" type at Re. 0-10-9 per pump . . . . .	4,730
7,000 pumps "B" at Rs. 13-15-2 per pump . . . . .	97,635
7,500 nozzleholders "S" type at Rs. 22-3-5 per nozzleholder . . . . .	1,66,602
7,500 nozzleholders "SA" type at Rs. 27-9-5 per nozzleholder . . . . .	2,06,914
(a) Total disadvantage . . . . .	4,75,854
(b) Total c.i.f. of 14,000 pumps and 15,000 nozzleholders . . . . .	7,95,771
Average rate of duty $\frac{a}{b} \times 100 =$ . . . . .	59·80 per cent.

15.1. Motor Industries Co. Ltd., have made considerable progress in the manufacture of the fuel injection equipment, which is a very vital component of a diesel engine. It is desirable to establish this industry in India in order that the country should be self-sufficient. Motor Industries Co. Ltd., have already invested a large amount in installing machinery and equipment for the manufacture of the fuel injection equipment. Additional machinery for increased production of nozzleholders has already been ordered by them and it is expected that this machinery will be installed shortly. According to their phased programme, the fuel injection equipment will be completely manufactured by them by the end of 1957. They are working in

Statement showing comparison of fair ex-works price of the indigenous fuel injection (pumps of two types and specifications and nozzleholders of two types and specifications) with the c. i. f. price and landed cost without duty of the corresponding imported fuel injection equipment.

Items	Pumps				Nozzleholders			
	Indigenous 'A' type H-PF1A70 BS175	Imported Bryce A1AA70/ 5599K	Indigenous 'B' type H-PF1B 60CS131	Imported C.A.V. BPF1B60BS 6031	Indigenous 'A' type H-KBL 67 S13	Imported Bryce AL67SD127	Indigenous 'B' type H-KB 35SA 369	Imported C.A.V. BKB35S87
1. Fair ex-works price . . .	Rs A. P. 43 5 9	Rs. A. P. ..	Rs. A. P. 54 7 5	Rs. A. P. ..	Rs. A. P. 44 14 9	Rs. A. P. ..	Rs. A. P. 39 5 2	Rs. A. P. ..
2. C.i.f. price . . .	..	41 10 0	..	36 13 4	..	22 3 4	..	10 10 8
3. Clearing charges . . .	..	1 1 0	..	3 10 11	..	0 8 0	..	1 1 1
4. Landed cost without duty (2 plus 3) ..	..	42 11 0	..	40 8 3	..	22 11 4	..	11 11 9
5. Difference between fair ex-works price and landed cost without duty . .	..	0 10 9	..	13 15 2	..	22 3 5	..	27 9 5
6. Difference as a percentage on c.i.f. ..	..	1.61	..	37.87	..	100.02	..	258.64

collaboration with Bosch, whose firm is well-known for the manufacture of diesel fuel injection equipment. Fuel Injections Ltd., have also arranged for technical collaboration with a Swedish firm of manufacturers. Although the fuel injection equipment produced by Motor Industries Co. Ltd., has been found to be satisfactory by one of the leading diesel engine manufacturers in the country, it is likely that they may meet with some difficulty in selling their products as they are introducing them for the first time. We consider that it is essential to create conditions favourable to the growth of this industry and that unless adequate protection and assistance are assured to it, the industry will be in difficulties and the capital required for additional machinery and equipment for complete manufacture of the equipment might not be forthcoming. The industry also will not have sufficient incentive to undertake further manufacture. The statement given in paragraph 14 shows that a duty of 59.80 per cent is required to equate the fair ex-works price of the indigenous fuel injection equipment with the landed cost without duty of the corresponding imported equipment of the U.K. origin. We, therefore, recommend that protection should be granted to the industry till 31st December, 1956, in the first instance, by levying a duty of 60 per cent. *ad valorem* on fuel injection equipment i.e. pumps and nozzleholders separately. Nozzleholders with a clamping capacity up to 1" clamping diameter for nozzles (atomisers) for automobile diesel engines and component parts thereof excluding nozzles, of the U.K. manufacture if assessed to import duty under Item No. 75(11) (i) of the Indian Customs Tariff Schedule will be entitled to a preference of 7½ per cent. *ad valorem* under the India-U.K. Trade Agreement. This preference can be maintained by reducing the import duty on such nozzleholders and parts thereof excluding nozzles of the U.K. manufacture to 52½ per cent. *ad valorem* by a notification under Section 23 of the Sea Customs Act provided they are not also adapted for use in stationary diesel engines. We are, however, of the view that this condition is not likely to be fulfilled since such nozzleholders and parts thereof excluding nozzles of the U.K. manufacture are interchangeable between stationary and automobile diesel engines, and hence such nozzleholders and parts thereof excluding nozzles of the U.K. manufacture will in practice be assessed to duty at 60 per cent *ad valorem*. Since the cost of pumps and nozzleholders forms a small proportion of the total cost of a single cylinder stationary diesel engine, and the occasion for their replacement is rare, we do not think that the rate of duty recommended by us will cause hardship to persons who buy indigenous diesel engines or who buy pumps and nozzleholders for replacement for diesel engines already owned by them. By the end of 1956, the other unit also is expected to be in production and adequate data for a fairly long period would be available for estimating the future costs with precision. We, therefore, recommend that the position should be reviewed before the end of 1956.

15.2. If our recommendation for the grant of protection to the diesel fuel injection equipment industry is accepted, item No. 72(3) of the Indian Customs Tariff Schedule should be modified so as to read—

Item No. 72(3) "Component parts of machinery as defined in Items Nos. 72, 72(1) and 72(2), not otherwise specified, namely, such parts only as are essential for the working

of the machine or apparatus and have been given for that purpose some special shape or quality which would not be essential for their use for any other purpose but excluding small tools like twist drills and reamers, dies and taps, gear cutters and hacksaw blades:

"Provided that articles which do not satisfy this condition shall also be deemed to be component parts of the machine to which they belong if they are essential to its operation and are imported with it in such quantities as may appear to the Collector of Customs to be reasonable."

and a separate item should be introduced in the Indian Customs Tariff Schedule as follows:—

Name of article	Nature of duty	Standard rate of duty	Preferential rate of duty if the article is the produce or manufacture of			Duration of protective rates of duty
			The U.K.	A British Colony	Burma	
1	2	3	4	5	6	7
(1) Single cylinder fuel injection pumps for stationary diesel engines, and component parts thereof, excluding elements and delivery valves when imported separately.	Protective	60 per cent. <i>ad valorem</i>	..	..	..	31st Dec. 1956.
(2) Nozzleholders with a clamping capacity up to one inch clamping diameter for nozzles (atomisers) for use on stationary as well as automobile diesel engines, and component parts thereof excluding nozzles.	Protective	60 per cent.* <i>ad valorem</i> .	..	..	..	Do.

\*Preferential rate of duty to be fixed in accordance with the India-U.K. Trade Agreement.

As regards component parts mentioned above, namely, elements, delivery valves and nozzles which are not covered by our recommendation, they will be assessed to revenue duty as at present. The revenue duty on these parts is much lower than the protective duty that we have recommended for pumps and nozzle-holders. We have excluded them from the scope of the protective duty as they are fast moving parts and we feel that it would not be fair to the consumers to ask them to pay a high duty on their imports when there is no prospect of indigenous production of these parts in the immediate future and the case of this industry is proposed to be reviewed before the end of 1956. Imports of diesel fuel injection equipment and component

parts thereof used in agricultural tractors when they are non-inter-changeable with vehicular type of diesel engines, are now allowed duty free under I.C.T. item No. 72(30) which is a GATT item. In the scheme of protection to the diesel fuel injection equipment industry that we have proposed, the same position will be maintained.

16.1. Motor Industries Co. Ltd., have asked for a ban on imports of diesel fuel injection equipment. They have stated that their production will be sufficient to meet the full requirements of the country in respect of pumps and nozzleholders. We have estimated the annual domestic demand for pumps and nozzleholders for single cylinder stationary diesel engines at 17,000 (11,000 for original equipment and 6,000 for replacement) and for nozzleholders for automobile diesel engines at 33,000 (24,000 for original equipment and 9,000 for replacement), and the annual production of pumps and nozzleholders by Motor Industries Co. Ltd., at 14,000 and 15,000 respectively. Their representative informed us at the public inquiry that they could increase production of pumps without much difficulty if necessary. Motor Industries Co. Ltd., have further stated that when additional machinery and equipment for which they have already placed orders are received, their annual production of nozzleholders would increase by about 35,000. They are thus in a position to meet at present the entire domestic demand for pumps and nozzleholders for original equipment and part of the demand for replacement for single cylinder stationary diesel engines. They could also meet the balance of the demand by increasing their production. They will be able to meet the entire demand for nozzleholders for replacement for single cylinder stationary diesel engines and for original equipment for automobile diesel engines (Perkins) and for replacement for automobile diesel engines in the country, when additional plant and machinery are received by them. Since the quality of the diesel fuel injection equipment, i.e., pumps and nozzleholders produced by Motor Industries Co. Ltd., is expected to be satisfactory as stated by us in paragraph 9.1, we consider that there is no need to allow imports of pumps and nozzleholders for original equipment for single cylinder stationary diesel engines. There may, however, be one or two cases in which manufacturers of single cylinder stationary diesel engines in the country find it necessary to import pumps and nozzleholders because the design of their engines is such that pumps and nozzleholders produced by Motor Industries Co. Ltd., are not suitable for their engines and it would not be feasible to alter the design of their engines. Such requests will have to be considered on their merits. There are also certain single cylinder stationary diesel engines already in use in the country, whose design is such that pumps and nozzleholders produced by Motor Industries Co. Ltd., are not suitable for replacement. In such cases, imports will have to be allowed. While, therefore, we are of the opinion that a total ban is out of the question, we recommend that assistance should be given to the industry by regulating imports of pumps and nozzleholders in the following manner:—

- (i) No imports of pumps and nozzleholders should be allowed for original equipment for single cylinder stationary diesel engines produced in the country, except in cases of the type mentioned above.

- (ii) Imports of pumps and nozzleholders for replacement for single cylinder stationary diesel engines already in use in the country should be allowed to the extent of the gap between the demand for replacement and the balance of estimated production after meeting the requirements for original equipment.
- (iii) Imports of nozzleholders for original equipment for automobile diesel engines (Perkins) and for replacement for automobile diesel engines already in use in the country should be allowed to the full extent until additional machinery and equipment are installed by Motor Industries Co. Ltd., and thereafter to the extent of the gap between the demand for nozzleholders for original equipment and replacement and the estimated increase in production.

16.2. Motor Industries Co. Ltd., have represented that if components of single cylinder fuel injection pumps for stationary diesel engines were allowed to be imported freely, it was likely that fuel injection pumps would be assembled from those components, and assemblers might be able to sell them at lower prices. They, therefore, have asked that a complete ban should be imposed on imports of components also. Since components such as elements, delivery valves, etc., are not being produced at present by Motor Industries Co. Ltd., we think that it will not be fair to consumers to impose a ban on imports of these components. In order, however, to prevent the assembling of imported components into fuel injection pumps to the detriment of the indigenous industry, we recommend that a ban should be imposed on such components as pump body and control rod without which assembly of a pump is not possible. We have selected these two components because the need for replacing them is rare and can be met by making provision for granting *ad hoc* licences.

16.3. Motor Industries Co. Ltd., have also requested that exemption should be given to them from payment of import duty in respect of raw materials and finished components imported by them. We have already indicated in paragraph 8.2 that the raw materials which are not available in the country will have to be imported for some time to come. As the element of customs duty in respect of the imported raw materials and finished components comes to Rs. 1-6-0 and Rs. 2-6-0 in the case of two types of pumps and Re. 0-12-1 and Re. 0-10-0 in the case of two types of nozzleholders, we do not think it necessary that any relief should be granted to the industry by exempting it from payment of customs duty on imported raw materials and finished products. Besides, the import duty paid on raw materials and finished products has been taken into account by us in estimating the fair ex-works price of the equipment produced in the country.

16.4. Motor Industries Co. Ltd., have informed us that they have set up ten service stations in different parts of the country. It is essential that consumers of fuel injection equipment should be able to purchase the equipment whenever it is needed and also have facilities for its servicing. We, therefore, recommend that the manufacturers of the fuel injection equipment should take steps to build up an adequate sales and service organisation at important consuming



centres so as to be able to meet the requirements of consumers in different parts of the country, to maintain adequate stocks of various types and specifications of pumps and nozzleholders required by consumers, and to provide adequate facilities for the servicing of their equipment.

17. Our conclusions and recommendations are summarised as under:—

**Summary of conclusions and recommendations** (i) The scope of the inquiry is confined to (a) single cylinder fuel injection equipment for stationary diesel engines, and (b) nozzleholders with a clamping capacity upto 1" clamping diameter for nozzles (atomisers) for use on stationary as well as automobile diesel engines.

[Paragraph 4.2.]

(ii) The domestic demand for pumps and nozzleholders for single cylinder stationary diesel engines is estimated at 17,000 (11,000 for original equipment and 6,000 for replacement), while the domestic demand for nozzleholders for automobile diesel engines is estimated at 33,000 (24,000 for original equipment and 9,000 for replacement).

[Paragraph 6.6.]

(iii) The annual capacity of Motor Industries Co. Ltd., is estimated at 10,000 pumps and 10,000 nozzleholders on single shift basis, and at 14,000 pumps and 15,000 nozzleholders on triple shift basis.

[Paragraph 7.1.]

(iv) The annual capacity for pumps could be increased further without much difficulty; and for nozzleholders to 50,000 when additional machinery and equipment are installed by Motor Industries Co. Ltd.

[Paragraph 7.1.]

(v) Motor Industries Co. Ltd., and Fuel Injections Ltd., should be required to submit a detailed fixed programme of manufacture of components for 1955, 1956 and 1957 so that by the end of 1957, it should be possible for them to manufacture all components of pumps and nozzleholders in India.

[Paragraph 7.6.]

(vi) Steps should be taken by Government to ensure that the phased programme is implemented by Motor Industries Co. Ltd., and Fuel Injections Ltd., according to the time table approved by them (i.e. Government).

[Paragraph 7.6.]

(vii) Government should take steps to develop indigenous production of raw materials which are imported at present.

[Paragraph 8.4.]

(viii) Government should make arrangements for periodical testing of the quality of indigenous fuel injection equipment.

[Paragraph 9.1.]

(ix) The Indian Standards Institution should examine the feasibility of formulating standard specifications for the fuel injection equipment as well as its principal components in consultation with the manufacturers of fuel injection equipment, stationary diesel

engines, and diesel engine automobiles.

[Paragraph 9.3.]

(x) Government should make arrangements with the Collectors of Customs, and the Director General of Commercial Intelligence and Statistics to record the imports of diesel fuel injection equipment separately under two categories *viz.* (i) single cylinder fuel injection pumps for stationary diesel engines and (ii) nozzleholders with a clamping capacity upto 1" clamping diameter for nozzles (atomisers) for use on stationary as well as automobile diesel engines.

[Paragraph 10.4.]

(xi) Protection should be granted to the industry till 31st December, 1956, in the first instance by levying a duty of 60 per cent. *ad valorem* on single cylinder fuel injection pumps for stationary diesel engines and nozzleholders with a clamping capacity up to 1" clamping diameter for nozzles (atomisers) and component parts thereof excluding elements and delivery valves when imported separately and nozzles respectively. The rate of duty for nozzleholders with a clamping capacity upto 1" clamping diameter for nozzles (atomisers) of British manufacture should be fixed in accordance with the India-U.K. Trade Agreement.

[Paragraph 15.1.]

(xii) Imports of single cylinder fuel injection pumps for stationary diesel engines and nozzleholders should be regulated in the manner indicated in paragraph 16.1.

[Paragraph 16.1.]

(xiii) A ban should be imposed on pump body and control rod without which the assembly of a single cylinder fuel injection pump for a stationary diesel engine is not possible.

[Paragraph 16.2.]

(xiv) The manufacturers of fuel injection equipment should take steps to build up an adequate sales and service organization so as to be able to meet the requirements of consumers in different parts of the country. They should also maintain adequate stocks of various types and specifications of pumps and nozzleholders required by consumers, and also provide adequate facilities for the servicing of their equipment.

[Paragraph 16.4.]

18. We wish to express our thanks to the manufacturers, importers and consumers who furnished us with valuable information and to their representatives who gave evidence before us. Our thanks are also due to Col. V.P.S. Menon, Officer on Special Duty (Automobiles) of the Development Wing of the Ministry of Commerce and Industry, who gave us valuable assistance in connection with this inquiry.

M. D. BHAT, *Chairman.*

B. N. DAS GUPTA, *Member.*

C. RAMASUBBAN, *Member.*

RAMA VARMA, *Secretary.*

Bombay,

12th March, 1955.

## APPENDIX I

(Vide paragraph 2.1.)

### List of firms or bodies to whom the Commission's questionnaires were issued and from whom replies or memoranda were received.

\*Indicates that they have sent replies or memoranda.

†Indicates that they are not interested.

#### A. PRODUCERS:

- \*1. Fuel Injections Ltd., 43, Forbes Street, Fort, Bombay.
- \*2. Motor Industries Co. Ltd., Adugodi, Post Box No. 93, Bangalore—1.
- †3. Simpson & Co. Ltd., 202/203, Mount Road, Madras.

#### B. IMPORTERS:

##### (i) *Manufacturers/Assemblers of automobiles.*

- †1. Addison & Co. Ltd., 158, Mount Road, Madras.
- \*2. Ashok Motors Ltd., 38, Mount Road, Madras—6.
- \*3. Automobile Products of India Ltd., Bhandup, Bombay.
4. Dewar's Garage & Engineering Works, 4, Council House Street, Calcutta—1.
5. French Motor Car Co. Ltd., 9—11, Hughes Road, Bombay—26.
6. General Motors India Ltd., Post Box No. 39, Bombay.
- \*7. George Oakes Ltd., (Bombay Operations), (Ford Motor Co. of India Ltd.), Swadeshi Mills Compound, New Queen's Road, Bombay—4.
8. Hindustan Motors Ltd., 8, Royal Exchange Place, Calcutta.
9. Mahindra & Mahindra Ltd., Gateway Building, Apollo Bunder, Fort, Bombay.
10. Premier Automobiles Ltd., Agra Road, Kurla, Bombay.
11. Peninsular Motor Corporation Ltd., 19, Convent Road, Entally, Calcutta.
12. Standard Motor Products of India Ltd., 29, Mount Road, Madras.

##### (ii) *Other importers and dealers.*

- \*13. Automotive Manufacturer's Ltd., 108, Bazaar Road, Kurla, Bombay.
- †14. Auto & Diesels Co. Ltd., 1—155, Mount Road, Madras.
15. W. H. Brady & Co. Ltd., 12, Vir Nariman Road, Bombay—1.
- \*16. Bryce Berger Ltd., Duke's Court, Duke Street, St. James's London S.W. 1, (U.K.).
17. Diesel India, Shethia Building, Relief Road, Ahmedabad.
- \*18. Diesel (India), Opposite Lalbagh, Bangalore—2.
- \*19. Eruch D. Engineer & Co., Crossley House, Appollo Street, Bombay.
20. Ghaziabad Engineering Co. Ltd., Peareylal Building, 44, Queensway, New Delhi.
- \*21. Greaves Cotton & Co. Ltd., 1, Forbes Street, Fort, Bombay—1.
22. Gounder & Co. Ltd., Pollachi, South India.
23. Gujarat Battery Auto Electric Co., Lal Darwaja, Ahmedabad.
24. Honesty Trading Corporation, Beaumon Chambers, Medows Street, Fort, Bombay.
- \*25. Industrial & Agricultural Engineering Company (Bombay) Ltd., 43, Forbes Street, Bombay—1.
- \*26. William Jacks & Co. Ltd., Hamilton House, Ballard Estate, Fort, Bombay.

27. Jayems Engineering Co., Warden House, Sir P. M. Road, Fort, Bombay.
- \*28. Lucas Indian Service Ltd., New Queen's Road, Bombay.
29. Lucas Indian Service Ltd., Patullo's Road, Mount Road, Madras.
- \*30. Motor Industries Co., Ltd., (Sales), 41, Queen's Road, Bombay.
- \*31. Muller & Phipps (India) Ltd., Queen's Mansions, Bastion Road, Fort, Bombay.
- \*32. Parry & Co. Ltd., Dare House, 1st Line Beach, Madras.
33. Patel Engineering Co. Ltd., United India Building, Sir P. M. Road, Fort, Bombay—1.
34. Power, Tools & Appliances Co., Avantikabai Gokhale Street, Bombay.
35. Rallis India Limited, 21, Ravelin Street, Bombay—1.
- \*36. Simpson & Company Limited, 202/203, Mount Road, Madras—2.
37. Tractors (India) Ltd., P.O. Box 323, Calcutta.
- \*38. Voltas Limited, Chinchpokli Road, Bombay—12.
- †39. Vulcan Trading Co. Ltd., Indian Mercantile Chambers, Nicol Road, Ballard Estate, Fort, Bombay.
40. Willcox (Buckwell-India) Ltd., P.O. Box 289, New Delhi.

#### C. CONSUMERS:

##### (i) *Manufacturers/Assemblers of automobiles.*

- †1. Addison & Co. Ltd., 158, Mount Road, Madras.
- \*2. Ashok Motors Ltd., 38 Mount Road, Madras.
- \*3. Automobile Products of India Ltd., Bhandup, Bombay.
- \*4. Dewar's Garage & Engineering Works, 4, Council House Street, Calcutta—1.
5. French Motor Car Co. Ltd., 9—11, Hughes Road, Bombay—26.
6. General Motors India Ltd., Post Box No. 39, Bombay.
- \*7. George Oakes Ltd., Swadeshi Mills Compound, New Queen's Road, Bombay—4.
- \*8. Hindustan Motors Ltd., 8, Royal Exchange Place, Calcutta.
- \*9. Mahindra & Mahindra Ltd., Gateway Building, Apollo Bunder Fort, Bombay.
- \*10. Premier Automobiles Ltd., Agra Road, Kurla, Bombay.
11. Peninsular Motor Corporation Ltd., 19, Convent Road, Entally, Calcutta.
12. Standard Motor Products of India Ltd., 29, Mount Road, Madras.

##### (ii) *Fleet Owners.*

##### *Bombay State*

13. Ahmedabad Municipal Transport Service, Outside Jamalpur Gate, P.O. Box No. 142, Ahmedabad.
- \*14. Bombay Electric Supply & Transport Undertaking, Electric House, Colaba Causeway, Bombay.
- \*15. Burmah-Shell Oil Storage & Dist. Co., of India Limited, Burmah-Shell House, Currimbhoy Road, Ballard Estate, Bombay—1.
16. Singh Transport Company, Sitafalwadi, Mount Road, Mazgaon, Bombay.

##### *Bihar.*

17. National Industries, Dhanbad.
18. R. K. Budhia & Co., Ranchi, Bihar.
- \*19. Tata Iron & Steel Co. Ltd., Jamshedpur, Bihar.

##### *Delhi.*

20. Burmah-Shell Oil Storage & Dist. of India Co. Ltd., Delhi.

**Madras State.**

21. Annamallais Bus Transport Co. Ltd., Goodshed Road, Pollachi, South India.
22. Burmah-Shell Oil Storage & Dist. Co. of India Ltd., P.O. Box No. 157, Madras.
- \*23. Canara Public Conveyance Co. Ltd., Post Box No. 85, Mangalore (S. India).
24. City Transport Ltd., United Motors Building, Avanashi Road, P.B.No. 56, Coimbatore (S. India).
- \*25. C. C. Automobiles Ltd., Bank Road, Kozhikhode (South India).
26. Gobald Motor Service Ltd., Mettupalayam (South India).
27. Mettupalayam Coonoor Service Ltd., Mettupalayam (South India).
28. Nazeeria Motor Services Ltd., Nellore.
- \*29. Shri Rama Vilas Services Ltd., Kumbakonam. (South India).
- \*30. Southern Roadways Ltd., T. V. S. Building, West Veli Street, Madurai.
31. Shri Rama Vilas Services Ltd., "Dinroze Estate," 17, Mount Road, Madras—2.

**West Bengal.**

32. Allen Berry & Co. Ltd., 62, Hara Road, Ballygunge, Calcutta—19.
33. Shri Badri Singh, 101, Tollygunge Circular Road, Calcutta.
34. Burmah-Shell Oil Storage & Dist. Co. of India Ltd., Calcutta.
- †35. Deepi Transport, Mookerji House, 17, Brabourne Road, Calcutta.
36. M. Tilak & Co., 48, Ezra Street, Calcutta.
37. National Transport Agency, 60/1, Ballygunge, Circular Road, Calcutta—19.
38. Podar Brothers Ltd., 1154, Chittranjan Avenue, Calcutta.
39. R. Sen & Co., 10/1, Elgin Road, Calcutta.

**Uttar Pradesh.**

40. Agra Roadways, Agra.
41. Allahabad Roadways, Allahabad.
42. Bareilly Roadways, Bareilly.
43. Gorakhpur Roadways, Gorakhpur.
44. Kumaon Roadways, Kanpur.
45. Kanpur Roadways, Kanpur.
46. Lucknow Roadways, Lucknow.
- \*47. Meerut Roadways, Meerut.
48. Victory Transport Co., 17/9, Mahatma Gandhi Road, Kanpur.

**Rajasthan.**

49. Automobile Transport (Raj) Ltd., Ajmer.

**Hyderabad State.**

- \*50. Superintendent, Road Transport Department, Mushirabad, Hyderabad. (Dn.).

**Travancore-Cochin.**

51. Motor Service Syndicate Ltd., Alleppy. (South India),
52. R. S. N. Motors Services, Trichur. (South India).
53. Swaraj Motors Ltd., Kottayam. (South India).

**(iii) State Transport Services.**

54. Manager, Ambala Roadways, Ambala.
- \*55. General Manager, Amritsar Omnibus Service, Amritsar.
- \*56. General Manager, Bangalore Transport Co. Ltd., 449, Wilson Gardens, Bangalore, South India.

57. General Manager, Bilaspur Transport Co. Ltd., Bilaspur (Simla Hills).
  58. Chairman, Bombay State Road Transport Corporation, Central Office, 80-81, Dr. Annie Beasant Road, Bombay—18.
  - \*59. Director of Transport Services, Madhya Pradesh, Nagpur.
  60. General Manager, State Transport Authority, Madhya Pradesh, Nagpur.
  61. Provincial Transport Co. Ltd., Ghat Road, Cotton Market, Nagpur.
  62. General Manager, C. P. Transport Service, Nagpur.
  - \*63. General Manager, Delhi Road Transport Authority, Scindia House, New Delhi.
  - †64. General Manager, Government Transport Service, Jaipur.
  - \*65. Director General, Directorate of Transportation, Government of West Bengal, 5, Nilgunge Road, Belghoria, 24 Parganas, West Bengal.
  66. General Manager, Himachal Government Transport Service, Simla.
  67. Manager, Jullunder Omnibus Service, Jullunder.
  68. Chairman, Kutch State Motor Service Board, Bhuj, Kutch.
  69. General Manager, Kulu Valley Transport Ltd., Pathankot.
  70. General Manager, Madhya Bharat Roadways, Gwalior.
  - \*71. Manager, Manipur State Transport, Imphal.
  72. Secretary, Mysore Government Road Transport Department, Bangalore (Mysore).
  - \*73. Transport Commissioner, Government Transport, Transport House, Mount Road, Madras.
  - \*74. General Manager, Orissa Road Transport Services Ltd., Berhampur, Ganjam Dist.
  75. General Manager, Provincial Transport Co. Ltd., Jabbalpur.
  76. Chairman, Board of Control, State Transport, Shillong, Assam.
  77. Secretary, State Transport Department, Rajkot (Saurashtra).
  - \*78. Director, State Transport Department, Trivandrum.
  79. Deputy Transport Commissioner (Workshops), Uttar Pradesh, Lucknow.
- (iv) *Diesel engine Manufacturers.*
- \*80. Cooper Engineering Ltd., Satara Road, Bombay State.
  81. Dhandayuthapani Foundry Ltd., Pappanaickenpalayam, Coimbatore.
  - \*82. Diesel Engine Factory, New Township, Faridabad (C. Rly.).
  83. Hindustan Motors Ltd., 8, Royal Exchange Place, Calcutta.
  - \*84. Indian Commercial Co. Ltd., Ghodbunder Road, Santacruz, Bombay—23.
  85. Indian National Diesel Engine Co. Ltd., Hall & Anderson Building, (1st floor) Parks Street, Calcutta—16.
  86. Jayems Beechey & Co. Ltd., Warden House, Sir P. M. Road, Fort, Bombay.
  - \*87. Kirloskar Oil Engines Ltd., Kirkee, Poona—3.
  - \*88. Kulko Engineering Works Ltd., Ichalkaranji, Kolhapur.
  89. Machines and Spares (India) Ltd., Garden View, 24, Daryaganj, Delhi—7.
  - \*90. Mazgon Docks Ltd., Mg. Agents: Mackinnon Mackenzie & Co. Ltd., Ballard Estate, Bombay.
  91. Nand Lal Bhandari & Sons, Indore City, Madhya Bharat.
  - \*92. Oriental Engineering Works Ltd., Industrial Area, Yamuna Nagar, Station Jagadhri.
  93. Shree Ram Mills, Ferguson Road, Parel, Bombay—12.
  94. Ruston & Hornsby (India) Ltd., 1, Forbes Street, Bombay.

95. Textool Co. Ltd., P.B. No. 221, Coimbatore.

(v) *Tractor Engineering Firms.*

96. Blackwood Hodge (India) Ltd., Lotus House, Marine Lines, Bombay.

97. J. N. Marshall & Co. Ltd., 5, Wallace Street, Fort, Bombay.

\*98. Larsen & Tourbro, Ltd., J. K. Building, Ballard Estate, Bombay—1.

99. Marshall Sons & Co. (India) Ltd., Marshall Building, Ballard Road, Bombay.

\*100. Patel Engineering Co. Ltd., United India Building, Sir P. M. Road, Fort, Bombay.

101. Tractors (India) Ltd., P.O. Box 323, Calcutta.

102. Willcox (Buckwell-India) Ltd., P.O. Box 289, New Delhi.

(vi) *General Engineering Firms.*

103. Acme Manufacturing Co. Ltd., Antop Hill, Wadala, Bombay.

104. Andrew Yule & Co., 8, Clive Row, Calcutta.

\*105. Gannon Dunkerley & Co. Ltd., Chartered Bank Building, Fort, Bombay.

\*106. Hindustan Aircraft Ltd., Jallahalli, Bangalore.

107. Kamani Bros. Ltd., 32, Nicol Road, Ballard Estate, Bombay.

108. Killick Industries Ltd., Home Street, Fort, Bombay.

109. Martin Burn Ltd., 12, Mission Row, Calcutta.

110. Millar's Timber & Trading Co. Ltd., Victoria House, Victoria Road, Bombay—27.

111. P. S. G. & Sons' Charity Industrial Institute, Peelamedu P.O., Coimbatore.

112. Power, Tools & Appliance Co., Avantikabai Gokhale Street, Bombay.

113. Richardson & Cruddas Ltd., Parel Road, Bombay—1.

(vii) *Construction Engineering Firms.*

114. Hindustan Construction Co. Ltd., Construction Building, Ballard Estate, Bombay.

115. Uttam Singh Dougal & Co. Ltd., Civil Engineers & Contractors, 11, Marina Arcade, New Delhi.

(viii) *Electrical Industries.*

116. Octavius Steel & Co. Ltd., P.B. No. 38, Calcutta.

117. South Madras Electrical Supply Corporation Ltd., Tiruchirapally, S. India.

\*118. Surat Electricity Co. Ltd., Tilak Maidan, Surat.

(ix) *Municipal Corporations.*

119. Commissioner, Calcutta Municipal Corporation, Calcutta.

120. Commissioner, Bombay Municipal Corporation, Bombay.

121. Commissioner, Delhi Municipal Corporation, Delhi.

122. Commissioner, Madras Municipal Corporation, Madras.

(x) *Port Trusts.*

\*123. Secretary, Bombay Port Trust, Ballard Estate, Bombay.

124. Secretary, Madras Port Trust, Madras.

\*125. Secretary, Calcutta Port Trust, Calcutta.

(xi) *Railways.*

\*126. Controller of Stores, Western Railway, Churchgate, Bombay.

127. Controller of Stores, Eastern Railway, Fairlie Place, Calcutta.

128. Controller of Stores, North Eastern Railway, 3, Koilghat Street, Calcutta.
- \*129. Controller of Stores, Southern Railway, Perambur, Madras.
130. Controller of Stores, Central Railway, Victoria Terminus, Bombay.
131. Divisional Superintendent, Northern Railway, (Bikaner Division), Bikaner.
132. Secretary, Railway Board, New Delhi.
- (xii) *Shipping.*
133. Great Eastern Shipping Co. Ltd., Royal Insurance Building, 14-Jamshetji Tata Road, Churchgate Reclamation, Bombay—1.
134. Scindia Steam Navigation Co. Ltd., Scindia House, Ballard Estate, Bombay.
- (xiii) *Other Engineering Industries.*
- \*135. Nizam Sugar Factory Ltd., Abid Road, Hyderabad (Dn.).
136. Walchandnagar Industries, Ltd., Walchandnagar, Poona District.
- †\*137. Vulcan Trading Co. Ltd., Indian Mercantile Chambers, Nicol Road, Ballard Estate, Bombay.

#### D. ASSOCIATIONS:

##### (i) *Automobile Associations.*

1. Shri Kundanlal, All India Motor Union Congress, 5192, Lahori Gate, Delhi—6.
2. Secretary, Automobile Association of Bengal, 40, Chowringhee Road, Calcutta.
3. Secretary, Automobile Association of Southern India, 202, Mount Road, Madras.
4. Secretary, Automobile Association of Upper India, 83/84, Theatre Communication Bldg., Connaught Circus, New Delhi.
5. Secretary, Automobile Manufacturers' Association of India, 23-B, Netaji Subhas Road, Calcutta—1.
6. Secretary, Indian Road & Transport Development Association Ltd., 27—Bastion Road, Bombay—1.
- †7. Secretary, United Provinces Automobile Association, 32/A, Canning Road, Allahabad.
8. Secretary, Western India Automobile Association, Lalji Naranji Memorial Building, Backbay Reclamation, Churchgate, Bombay—1.

##### (ii) *Automobile Importers' Associations.*

9. Ambala Motor Dealers' Association, Ellahie Buildings, S. B. Road Ambala Cantonment.
10. Secretary, Automobile Traders' Association, 12-Scindia House, Curzon Road, New Delhi.
- \*11. Secretary, Bombay Motor Merchants' Association Ltd., Sandhurst Building (Top Floor), Near Sandhurst Bridge, Bombay—4.
12. Secretary, Calcutta Motor Dealers' Association, P—6, Mission Row Extension, Calcutta—1.
13. Secretary, Delhi Motor Traders' Association, Post Box 1098, Kashmere Gate, Delhi—6.
14. Secretary, Motor Industries Association, 60/3, Dharamtola Street, Calcutta—1.
15. Secretary, Motor Manufacturers' and Importers' Association, Bank of Baroda Bldg., Fort, Bombay 1.
16. Society of Motor Manufacturers' and Traders' Ltd., P.O. Box 173, New Delhi.

##### (iii) *Engineering Associations.*

17. Secretary, Associated Corp. of Industries (India) Ltd., Commerce House, Ballard Estate, Bombay—1.



18. Secretary, British Internal Combustion Engine Manufacturers' Association, 6, Grafton Street, London. W. I. (U.K.).
19. Secretary, Engineering Association of India, (Bombay Presidency Branch), Construction House, Ballard Estate, Bombay—1.
- †20. Secretary, Engineering Association of India, 23-B, Netaji Subhas Road, Calcutta.

(iv) *Mill Associations.*

21. Secretary, Ahmedabad Millowner's Association, Lal Darwaja, Ahmedabad.
22. Secretary, Bengal Millowner's Association, Calcutta.
23. Secretary, C.P. & Berar Millowner's Association, Nagpur.
- †24. Secretary, Millowner's Association, 10, Vir Nariman Road, Fort, Bombay.
25. Secretary, Southern India Millowner's Association Race Course, Coimbatore, S. India.

(v) *Chamber of Commerce.*

26. Andhra Chamber of Commerce, Andhra Chamber Building, 272/3, Angappa Naick Street, Madras.
27. Associated Chambers of Commerce of India, Royal Exchange Building, Netaji Subhas Road, Calcutta.
28. Bengal Chamber of Commerce, Royal Exchange Building, 2, Netaji Subhas Road, Calcutta.
29. Bengal National Chamber of Commerce P-11, Mission Row Extension, 1st & 2nd Floor, Calcutta.
30. Bengal National Chamber of Commerce, Near Cotton Market, Nagpur.
31. Bihar Chamber of Commerce, Patna.
- \*32. Bharat Chamber of Commerce, Imperial Bank Building, (Burra Bazar Branch) Calcutta—7.
33. Bombay Chamber of Commerce, Mackinnon Mackenzies Building, Ballard Estate, Bombay.
34. C.P. & Berar Chamber of Commerce, Surza Villas, Temple Road, Civil Station, Nagpur.
35. Eastern Chamber of Commerce, 15, Clive Row, Calcutta.
36. Federation of Indian Chamber of Commerce & Industry, 28, Pherozechah Road, New Delhi.
37. Hindustan Chamber of Commerce, 14/2, Clive Row, Calcutta.
38. Indian Chamber of Commerce, Desi Beopar Mandal Ambala Cantt.
39. Indian Chamber of Commerce, 162, Netaji Subhas Road, Calcutta.
40. Indian Merchant's Chamber, Lalji Naranji Memorial Building, Back Bay Reclamation, Fort, Bombay.
41. Jaipur Chamber of Commerce, Johri Bazar, Jaipur.
42. Karnatak Chamber of Commerce, Hubli.
43. Madras Chamber of Commerce, Dare House, First Line Beach, Madras.
44. Maharashtra Chamber of Commerce, Industrial and Prudential Bldg., Near Churchgate Station, Bombay.
45. Maharatta Chamber of Commerce & Industries, 587/9, Shukrawar Peth, Tilak Road, Poona 2.
46. Mysore Chamber of Commerce, Bangalore.
47. Orissa Chamber of Commerce, P.O. Chandni Chowk, Cuttack.
48. Punjab Chamber of Commerce, Scindia House, New Delhi.
49. Saurashtra Chamber of Commerce, Mahatma Gandhi Road, Lokhand Bazar, Bhavnagar.
50. Southern India Chamber of Commerce, Indian Chamber Building, North Beach, Madras.

51. United Provinces Chamber of Commerce, 15/134, Civil Lines, Kanpur.
52. Upper Indian Chamber of Commerce, 14/2, Clive Row, Kanpur.
53. Western Indian Chamber of Commerce Ltd., 232—234, Kalbadevi Road, Bombay.

(vi) *Trade Associations.*

54. All India Importers' Association, Churchgate House, Churchgate Street, Bombay.
55. All India Manufacturers' Organisation, Industrial Assurance Building, Opp. Churchgate Station, Fort, Bombay.
56. Association of Indian Industries, Industrial Assurance Building, Opp. Churchgate Station, Fort, Bombay.
57. Indian Engineering Association, Royal Exchange Building, Netaji Subhas Road, Calcutta.
58. Madras Traders' Association, Mount Road, Madras.
59. Punjab Federation of Industry & Commerce, Amritsar.
60. West Coast Industries Association, Empress Hotel Road, Kozhikode, S. India.

(vii) *Other Associations.*

61. Secretary, Iron, Steel and Hardware Merchants' Chamber of India, K. T. Building, Opp. Victoria Docks, Blue Gate, Bombay—9.

**E. STATE GOVERNMENTS:**

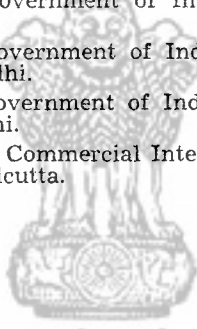
1. Chief Secretary to the Government of Andhra State, Kurnool.
2. Chief Secretary to the Government of Assam, Shillong.
- \*3. Chief Secretary to the Government of Bhopal, Bhopal.
- †4. Chief Secretary to the Government of Bihar, Patna.
5. Chief Secretary to the Government of Bombay, Bombay—1.
- \*6. Chief Secretary to the Government of Coorg, Mercara, Coorg State.
7. Chief Secretary to the Delhi State, Delhi.
8. Chief Secretary to the Government of Himachal Pradesh, Simla.
- †9. Chief Secretary to the Government of Hyderabad, Hyderabad (Deccan).
- †10. Chief Secretary to the Government of Jammu-Kashmir, Srinagar.
- \*11. Chief Secretary to the Government of Madhya Pradesh, Nagpur.
- \*12. Chief Secretary to the Government of Madhya Bharat, Gwalior.
- \*13. Chief Secretary to the Government of Madras, Fort St. George, Madras.
14. Chief Secretary to the Government of Mysore, Bangalore.
- \*15. Chief Secretary to the Government of Orissa, Cuttack.
16. Chief Secretary to the Government of East Punjab, Simla.
17. Chief Secretary to the Government of PEPSU, Patiala.
18. Chief Secretary to the Government of Rajasthan, Jaipur.
- \*19. Chief Secretary to the Government of Saurashtra, Kothi Compound, Rajkot.
20. Chief Secretary to the Government of Travancore-Cochin, Trivandrum.
21. Chief Secretary to the Government of Uttar Pradesh, Lucknow.
22. Chief Secretary to the Government of Vindhya Pradesh, Rewa.
- \*23. Secretary to the Government of West Bengal, Commerce and Industries Department, West Bengal, Calcutta.

**F. COLLECTORS OF CUSTOMS/CENTRAL EXCISE:**

- \*1. Deputy Collector of Central Excise and Land Customs, Ajmer.
- \*2. Collector of Central Excise, Post Box No. 118, Baroda.
- \*3. Collector of Central Excise, Construction House, Ballard Estate, Bombay—1.
- \*4. Collector Customs, New Customs House, Bombay.
- \*5. Collector of Customs, Calcutta.
- \*6. Collector of Customs, Custom House, Willingdon Island, Cochin.
- \*7. Collector of Customs, Post Box No. 55, Custom House, Madras.
- \*8. Assistant Collector of Central Excise, Puri Division, Puri.
- \*9. Collector of Central Excise, Shillong, Assam.

**G. CENTRAL GOVERNMENT DEPARTMENTS AND OTHER PARTIES:**

- \*1. Director General of Supplies & Disposals, Government of India, Shahjahan Road, New Delhi.
- \*2. Indian Institute of Science, Bangalore—3.
- \*3. Chief Industrial Adviser, Ministry of Commerce & Industry (Development Wing), Government of India, New Delhi.
- \*4. National Physical Laboratory of India, Hillside Road, New Delhi—12.
- 5. Secretary to the Government of India, Ministry of Defence, New Delhi.
- †6. Secretary to the Government of India, Ministry of Transport, New Delhi.
- \*7. Secretary to the Government of India, Ministry of Food & Agriculture, New Delhi.
- \*8. Secretary to the Government of India, Ministry of Irrigation & Power, New Delhi.
- \*9. Director General of Commercial Intelligence & Statistics, 1, Council House Street, Calcutta.



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APPENDIX II—*contd.*

Name of the representative	Representing	Name of the firm or body
10. Shri S.R. Talvadekar .	Representing .	Kulko Engineering Works, Ichalkaranji, Kolhapur.
11. Shri C.K. Bondre . .	Do. . .	Kirloskar Oil Engines Ltd. Kirkee, Poona-3.
12. Mr. P.W. Brandt .	} Do. . .	Larsen and Toubro Ltd., J.K. Building, Dougall Road Ballard Estate, Bombay.
13. Shri W. Barreto .		
14. Shri K.P. Khara . .	Do. . .	Patel Engineering Co., Ltd. United India Building, Sir, P.M. Road, Fort, Bombay.
15. Shri R.A. Majai . .	Do. . .	Vulcan Trading Co. Ltd., Indian Mercantile Chambers, Nicol Road, Ballard Estate, Fort, Bombay.
16. Shri K.H. Aswari .	Do. . .	Turner Hoare and Co., Ltd., Gateway Building, Apollo Bunder, Fort, Bombay. .
<b>D.—ASSOCIATIONS :</b>		
1. Shri D.S. Kalyanpur	Do. . .	Bombay Motor Merchant's Association, Sandhurst Building, Near Sandhurst Bridge, Bombay 4.
<b>E.—GOVERNMENT OFFICIALS:</b>		
1. Col. V.P.S. Menon, Officer on Special Duty (Automobiles).	Do. . .	Ministry of Commerce and Industry (Development Wing Government of India, New) Delhi.
2. Lt. Col. J.V.P. Braganza .	Do. . .	Ministry of Defence Government of India, New Delhi.
3. Shri B.K. Baam .	Do. . .	Collector of Customs, New Custom House, Ballard Estate, Bombay.

## APPENDIX II

[Vide paragraph 2'3]

*List of persons who attended the Commission's public inquiry on the 29th  
December, 1955*

Name of the representative	Representing	Name of the firm or body.
<b>A.—PRODUCERS :</b>		
1. Mr. E. Lang . . . } 2. Shri R.K. Tandon . . . } 3. Mr. H.C. Krack . . . } 4. Shri R.D. Char . . . }	Representing   Do. . .	Motor Industries Co. Ltd. Adugodi, P.B. No. 93 Bangalore and Bombay. Fuel Injections Ltd., 43, Forbes Street, Fort, Bombay.
<b>B.—IMPORTERS AND DEALERS :</b>		
1. Mr. H.W. Brown . . . } 2. Mr. A.D. King . . . } 3. Mr. A.A. Brooks . . . } 4. Mr. H.B. McAuslam . . . }	Do. . .   Do. . .	Lucas Indian Service Ltd. New Queens Road, Bombay. Bryce Berger Ltd., Duke's Court, Duke Street, St. James's, Square, London S.W.1.
5. Mr. W. Brodbeck . . . } 6. Mr. A.E. McCall . . . }	Do. . .	Voltas Limited, Chinchpokli Road, Bombay-12.
7. Shri S. Swaminathan . . .	Do. . .	South Indian Export Co. Ltd., Post Box No. 37, Madras.
8. Shri J.E. Engineer . . .	Do. . .	Eruch D. Engineer & Co., Crossley House, Apollo Street, Bombay.
9. Shri J.K. Clubwala . . . } 10. Shri B.M. Jathade . . . }	Do. . .	Parry and Co., Ltd., "Dare House" 1st Line Beach, Madras.
<b>C.—CONSUMERS :</b>		
1. Shri S.K. Shah . . .	Do. . .	Premier Automobiles Ltd. Agra Road, Kurla, Bom- bay.
2. Shri I. Chatterji . . .	Do. . .	Mahindra and Mahindra Ltd., Gateway Building, Apollo Bunder, Fort, Bombay.
3. Shri N.G. Morarji . . .	Do. . .	Ahmedabad Municipal Trans- port Service, Outside Jamalpur Gate, Ahmedabad.
4. Shri N. Balkrishna . . .	Do. . .	Bombay Electricity Supply and Transport Undertaking, Electric House, Colaba Ca- useway, Bombay.
5. Shri B.M. Mehta . . .	Do. . .	Bombay Port Trust, Bombay.
6. Mr. J.H. Langdon . . . } 7. Mr. M. Ahmadullah . . . }	Do. . .	Greaves Cotton and Co. Ltd., and Ruston and Hornsby Ltd., 1, Forbes Street, P.B. No. 91, Bombay.
8. Shri S. Krishnamoorthy . . . } 9. Shri A.N. Chinoy . . . }	Do. . .	Simpson and Co. Ltd., 202/203, Mount Road, Madras-2.

## APPENDIX III

[Vide paragraph 4.1.]

Statement showing types and specifications of pumps and nozzles holders proposed to be manufactured by Motor Industries Co. Ltd., Bangalore, with the equivalent types and specifications of pumps and nozzles holders manufactured by some of the well-known foreign manufacturers which are used in India.

Mico*	CAV	American Bosch	Bosch	Bryce	Remarks
<b>PUMPS :</b>					
<b>A—Types :</b>					
1. H-PF1A60Boo	. BPF1A60/00		PF1A60Boo	A1AA60/4515	
2. H-PF1A65Boo	. BPF1A65/00		PF1A65Boo		
	BPF1A65AS6062				
3. H-PF1A70Boo	. BPF1A70/00		PF1A70Boo		
4. H-PF1A80Boo	. BPF1A80/00		PF1A80Boo		
5. H-PF1A60Bo5	. BPF1A6005		PF1A60Bo5	A1AA60/5S15A1	KIRLOSKER
6. H-PF1A70Bo5	. BPF1A70Bo5		PF1A70Bo	A1AA70/5S11H	Do.
7. H-PF1A70BS175	.		PF1A70BS175	A1AA70/5S99K	Do.
<b>PFR-TYPE</b>					
H-PFR1A70/8	.		PFR1A70/8		LION (HINDUSTHAN)
<b>B—Type :</b>					
1. H-PF1B60Bo3	. BPF1B60Bo3		PF1B60Bo3		

# APPENDIX III—*conid*

Mico*	CAV	American Bosch	Bosch	Bryce	Remarks
2. H-PF1B70Bo3	. . . . .	BPFI1B70Bo3	PF1B70Bo3		
3. H-PF1B60Coo	. . . . .	BPFI1B60Boo	PF1B60Coo	AtAB 80/7	
4. H-PF1B70Coo	. . . . .	BPFI1B70Boo BPFI1B70BS61	PF1B70Coo		
5. H-PF1B80Coo	. . . . .	BPFI1B80Boo	PF1B80Coo		
6. H-PF1B90Coo	. . . . .	BPFI1B90Boo	PF1B90Coo		
7. H-PF1B100Coo	. . . . .	BPFI1B100Boo	PF1B100Coo	AtAB 100/8	
8. H-PF1B60Co3	. . . . .	BPFI1B60Bo3	PF1B60Co3		COOPER
9. H-PF1B70Co3	. . . . .	BPFI1B70Bo3	PF1B70Co3		
10. H-PF1B80Co3	. . . . .	BPFI1B80Bo3	PF1B80Co3	AtAB 80/8	Do.
11. H-PF1B90Co3	. . . . .	BPFI1B90Bo3	PF1B90Co3		Do.
12. H-PF1B100Co3	. . . . .	BPFI1B100Bo3	PF1B100Co3		Do.
13. H-PF1B80Co4	. . . . .	BPFI1B80Bo4	PF1B80Co4		
14. H-PF1B90Co4	. . . . .	BPFI1B90Bo4	PF1B90Co4		
15. H-PF1B100Co4	. . . . .	BPFI1B100Bo4	PF1B100Co4		
16. H-PF1B60CS131	. . . . .	BPFI1B60BS64 BPFI1B60BS6031	PF1B60CS131		COOPER
17. H-PF1B70CS131	. . . . .	BPFI1B70BS64	PF1B70CS131		
18. H-PF1B100CS216	. . . . .		PF1B100CS216		
19. H-PF1B80CS247	. . . . .		PF1B80CS247	AtCB80/7S60	
20. H-PF1B90CS247	. . . . .		PF1B90CS247	AtCB90/7S60	
21. H-PF1B100CS247	. . . . .		PF1B100CS247	AtCB100/7S60	

AIBB 80/8

PF1B80CS1075

PF1B100CS 1025/7

BPF1B80B03

22. H-PF1B80CS1075

23. H-PF1B100CS1025/70 . BPF1B100BS6255  
BPF1B100BS6044

## C—Type :

1. H-PF1C100A00 . BPF1C100A00
2. H-PF1C110A00 . BPF1C110A00
3. H-PF1C120A00 . BPF1C110A00
4. H-PF1C140A00 . BPF1C140A00
5. H-PF1C160A00 . BPF1C160A00
6. H-PF1C100A03 . BPF1C100A03
7. H-PF1C110A03 . BPF1C110A03
8. H-PF1C120A03 . BPF1C120A03
9. H-PF1C140A03 . BPF1C140A03

## NOZZLE HOLDERS :

1. H-KB35SA24 . BKB35SA24
2. H-KB50SA24 . BKB50SA24  
BKB50S92  
BKB50S501
3. H-KB80SA24 . BKB80SA24
4. H-KB35SA252 .
5. H-KB50SA252 .
6. H-KB56SA252 .

PF1C100A00

PF1C110A00

PF1C120A00

PF1C140A00

PF1C160A00

PF1C100A03

PF1C110A03

PF1C120A03

PF1C140A03

COOPER

COOPER

COOPER

A35SD101

A50SD101

Do.

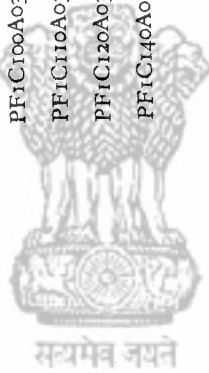
A80SD101

KB80SA24

KB35SA252

KB50SA252

KB56SA252





APPENDIX II—concl.

Mico *	Cav	American Bosch	Bosch	Bryce	Remarks
7. H-KB86SA252	.	.	KB86SA252	.	.
8. H-KB56SA347	.	.	KB56SA347	.	.
H-KB35SA 69	.	.	KB35SA369	.	PERKINS
10. (a) H-KB80TA264	.	.	KB80TA264	.	COOPER
(b) H-KB80TA312	.	AKB80T2512A	.	.	.
11. H-KBL67 13	.	.	KBL67S 13	AL67SD127	KIRLOSKER LION (HINDUS THAN).
12-H-KCA17SD3	.	.	.	.	.

\* Abbreviation for Motor Industries Co. Ltd., Bangalore.

## APPENDIX IV

[Vide paragraph 8·2.]

*Statement showing the programme of progressive manufacture of components for single cylinder pumps "PF A" and "PF B" types and "S" type Nozzleholders by Motor Industries Co. Ltd., Bangalore.*

Yes—indicates items that will be manufactured.

No—indicates items that will not be manufactured.

(a) Single cylinder "PF A" type pump

Serial No.	Part List No.	Name of the Components	Manu- factured in India 1954	Manu- factured in India 1955	Manu- factured in India 1956
I	1	Name Plate . . . . .	Yes	Yes	Yes
II	2	Pump Element . . . . .	No	Yes	Yes
III	4	Pump Housing . . . . .	Yes	Yes	Yes.
IV	4(a)	Split dowel pin . . . . .	No	Yes	Yes.
V	6	Delivery Valve Holder . . . . .	Yes	Yes	Yes.
VI	9	Packing Ring . . . . .	No	No	No
VII	10	Delivery Valve . . . . .	No	No	Yes
VIII	11	Delivery Valve Spring . . . . .	No	Yes	Yes
IX	12	4 Adjusting Spring Washers . . . . .	No	Yes	Yes.
X	12	Control Rod Indicator . . . . .	No	No	No
XI	14	Counter Sunk Screw . . . . .	Yes	Yes	Yes.
XII	15	Control Rod . . . . .	Yes	Yes	Yes.
XIII	16	Regulating Sleeve . . . . .	No	No	No
XIV	17	Upper Spring Plate . . . . .	Yes	Yes	Yes
XV	18	Plunger Spring . . . . .	No	Yes	Yes.
XVI	19	Lower Spring Plate . . . . .	Yes	Yes	Yes
XVII	21	Plunger Guide . . . . .	Yes	Yes	Yes.
XVIII	22	Spring Ring . . . . .	No	Yes	Yes.
XIX	23	Two Grooved Pins . . . . .	No	Yes	Yes.
XX	27	Banjo Connection . . . . .	Yes	Yes	Yes.
XXI	28	Hexagonal Hollow Screw . . . . .	Yes	Yes	Yes
XXII	29	Copper Washers . . . . .	No	Yes	Yes.
XXIII	30	Stopper . . . . .	Yes	Yes	Yes
XXIV	31	Distance Washers . . . . .	Yes	Yes	Yes
XXV	32	Cardboard Washers . . . . .	Yes	Yes	Yes
XXVI	33	Cap Nut . . . . .	Yes	Yes	Yes

## (b) Single cylinder "PF B" type Pump

Serial No.	Part List No.	Name of the Components	Manu- factured in India 1954	Manu- factured in India 1955	Manu- factured in India 1956
I	1	Name Plate . . . . .	Yes	Yes	Yes
II	2	Pump Housing . . . . .	Yes	Yes	Yes
III	4	Delivery Valve Holder . . . . .	Yes	Yes	Yes
IV	5	Pump Element . . . . .	No	Yes	Yes
V	6	Delivery Valve . . . . .	No	No	Yes
VI	7	Locking Screw . . . . .	Yes	Yes	Yes
VII	8	Packing Ring . . . . .	No	No	No
VIII	10	Regulating Sleeve . . . . .	No	No	No
IX	11	Upper Spring Plate . . . . .	Yes	Yes	Yes
X	12	Lower Spring Plate . . . . .	Yes	Yes	Yes
XI	13	Plunger Valve Spring . . . . .	No	Yes	Yes
XII	14	Plunger Guide . . . . .	Yes	Yes	Yes
XIII	15	Special Washer . . . . .	No	Yes	Yes
XIV	17	Delivery Valve Spring . . . . .	No	Yes	Yes
XV	19	Two Grooved Pins . . . . .	No	Yes	Yes
XVI	20	Control Rod . . . . .	Yes	Yes	Yes
XVII	21	Spring Ring . . . . .	No	Yes	Yes
XVIII	22	Cheese Head Screw . . . . .	Yes	Yes	Yes
XIX	23	Copper Washer . . . . .	No	Yes	Yes
XX	24	4 Adjusting Washers . . . . .	No	Yes	Yes
XXI	25	Indicator . . . . .	No	No	No
XXII	26	Counter Sunk Screw . . . . .	Yes	Yes	Yes
XXIII	28	Packing Ring . . . . .	No	No	No
XXIV	29	Reduction Nipple . . . . .	Yes	Yes	Yes
XXV	30	2 Copper Washers . . . . .	No	Yes	Yes
XXVI	31	Banjo Connection . . . . .	Yes	Yes	Yes
XXVII	32	Hexagonal Hollow Screw . . . . .	Yes	Yes	Yes
XXVIII	33	Distance Washers . . . . .	Yes	Yes	Yes
XXIX	34	Cap Nut . . . . .	Yes	Yes	Yes
XXX	35	Cardboard Washer . . . . .	Yes	Yes	Yes
XXXI	36	Lead Seal . . . . .	No	Yes	Yes
XXXII	37	Stopper . . . . .	Yes	Yes	Yes
XXXIII	45	Packing Ring . . . . .	Yes	Yes	Yes

## (C) "S" type Nozzleholder

Serial No.	Part List No.	Name of components	Manu- factured in India 1954	Manu- factured in India 1955	Manu- factured in India 1956
I	1	Nozzleholder Body . . . . .	Yes	Yes	Yes
II	2	Pressure Rod . . . . .	Yes	Yes	Yes
III	2(a)	Lower Spring Plate . . . . .	Yes	Yes	Yes
IV	3	Nozzleholder Spring . . . . .	No	Yes	Yes
V	4	Upper Spring Plate . . . . .	Yes	Yes	Yes
VI	5	Screw Cap . . . . .	Yes	Yes	Yes
VII	6	Adjusting Screw . . . . .	Yes	Yes	Yes
VIII	8	Hexagonal Nut . . . . .	Yes	Yes	Yes
IX	9	Copper Washer . . . . .	No	Yes	Yes
X	10	Cap Nut . . . . .	Yes	Yes	Yes
XI	12	Packing Ring . . . . .	Yes	Yes	Yes
XII	13	Screwed Sleeve . . . . .	Yes	Yes	Yes
XIII	14	Nozzle Cap Nut . . . . .	Yes	Yes	Yes
XIV	16	Pipe Cap Nut . . . . .	Yes	Yes	Yes
XV	17	Distance Washers . . . . .	Yes	Yes	Yes
XVI	19	Cardboard Washers . . . . .	Yes	Yes	Yes
XVII	21	Stopper . . . . .	Yes	Yes	Yes
XVIII	..	Protection Cap . . . . .	Yes	Yes	Yes
XIX	..	Paper Washers . . . . .	Yes	Yes	Yes
XX	..	Cardboard Washers . . . . .	Yes	Yes	Yes



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